

FACULTY OF ENGINEERING**B.E. 4/4 (Civil) I – Semester (Main) Examination, November / December 2016****Subject: Estimating and Specifications****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 Explain centerline method for building estimates. 2
- 2 Calculate the unit weights of steel reinforcement of diameter 8mm, 16mm, 18mm and 25mm. 2
- 3 List the essential conditions of a contract. 2
- 4 Explain earnest money and its significance. 2
- 5 What is the significance of muster roll in a construction site? 2
- 6 Describe the long wall – short wall method of estimation. 3
- 7 What methods can be used to estimate for the earthwork of a road? 3
- 8 Calculate the quantities of cement and aggregates in PCC 136 for 10m³. 3
- 9 Write short notes on 'Measurement book'. 3
- 10 The Hyderabad Metro Rail project is the world's largest PPP in the metro sector. Elaborate PPP and explain. 3

PART – B (5x10 = 50 Marks)

- 11 Prepare a detailed estimate of the following items of work for a residential building as shown in Fig. 1 using centerline method. 10
 - a) Earthwork in Excavation
 - b) Brickwork used in superstructure

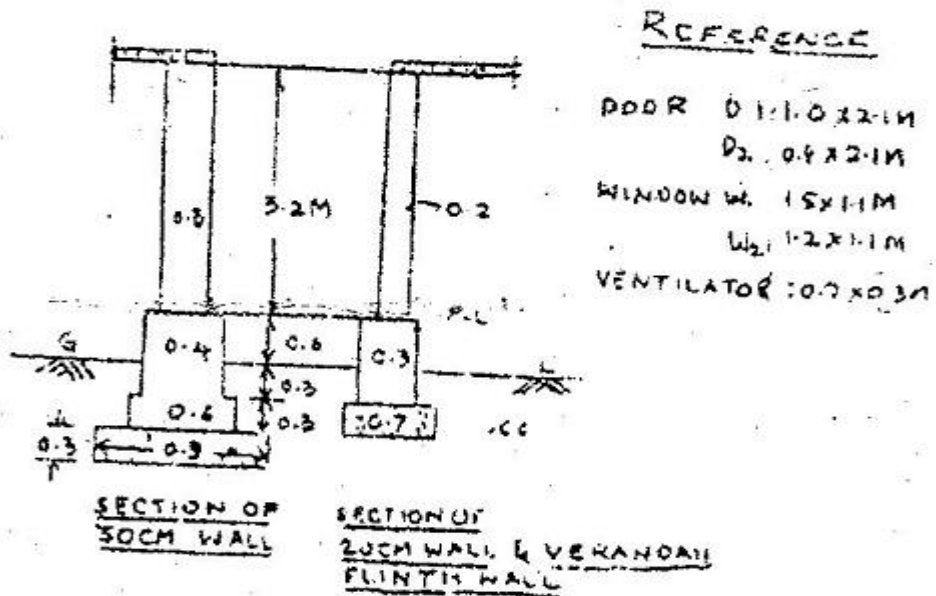
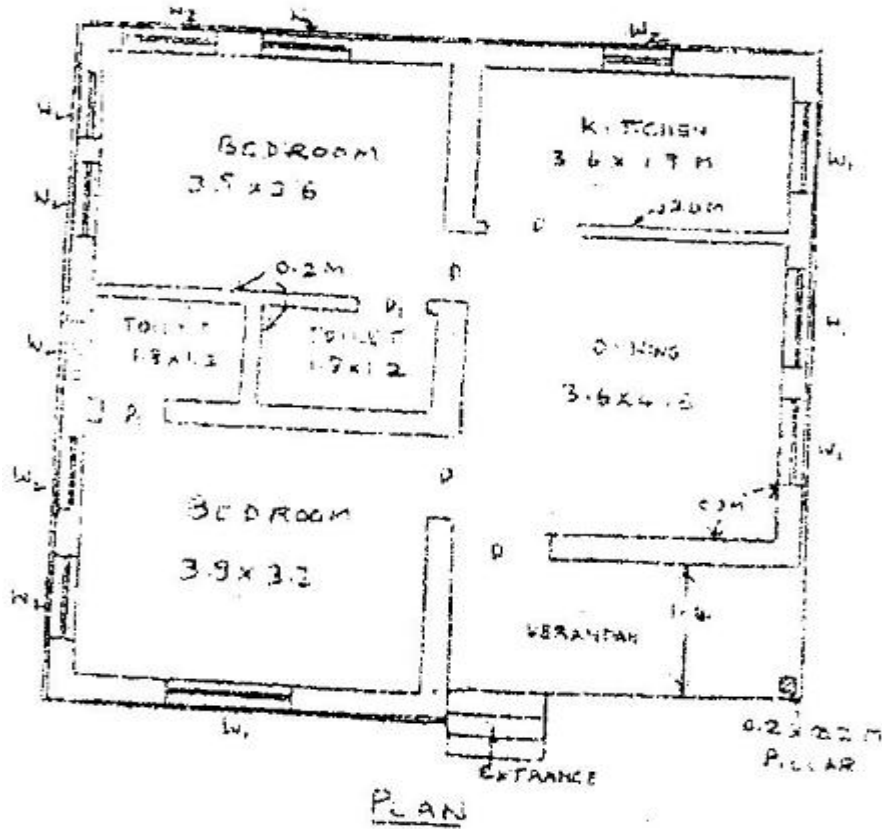


FIG. 1

NOTE: ALL DIMENSIONS ARE IN METRES

- 12 a) Explain the terms lead and lift and give the normal values in a construction site. 2
 b) Calculate the quantity of earthwork in embankment for a portion of a channel with the following data: 8
 Bed width = 3m
 Free board = 50cm
 Slope of cutting = 1:1
 Slope in banking = 1:51
 Full supply depth = 1m
 Top width of both banks = 1.5m

| Distance (m) | 0 | 20 | 40 | 60 | 80 | 100 |
|------------------------|--------|--------|--------|--------|--------|--------|
| Ground level (m) | 122.24 | 124.80 | 124.43 | 124.12 | 124.50 | 124.98 |
| Proposed bed level (m) | 124.00 | 123.94 | 123.88 | 123.82 | 123.76 | 123.70 |

- 13 a) Calculate the quantities of RCC slab 1:2:4 of thickness 150mm and inside dimensions 3^mx4^m. Take 16mm dia for main reinforcement at 120mm c/c and 12mm dia for distribution reinforcement at 150mm c/c spacing. 8
 b) Deduce for the extra length required in steel reinforcement bars bent at two places at angles of 45° each and looped both ends by 180°. 2
- 14 Find the rates for the following items required for a building: 10
 a) First class brickwork in superstructure in cement mortar 1 : 4 for 10cu.m.
 b) 1:2:4 CC required for slab and beam for 10cu.m. of RCC works
 The following rates at site may be considered:
 Sand Rs. 350 per cu.m.
 Aggregate Rs. 800 per cu.m.
 Cement Rs. 320 per bag of 50kgs
 Mixing mortar Rs. 50 per cu.m.
 Standard bricks Rs. 20000 per load (5000 nos)
 Steel Rs. 40000 per tonne
 First class mason Rs. 500 / day
 Man mazdoor Rs. 400 / day
 Woman mazdoor Rs. 350 / day
 Bar building Rs. 15 / kg
 Centering and shuttering Rs. 350 per cu.m.
- 15 a) List the various types of contracts and explain the advantages and disadvantages of any two. 6
 b) Discuss about the specifications of a first class building in detail. 4
- 16 Write the specifications of the following items of work:
 a) DPC 5
 b) Bulking of Sand 5
- 17 Write short notes on any two of the following:
 a) Measurement book and security deposit. 5
 b) Tender notice and bar bending schedule 5
 c) BOT and BOOT with examples. 5

FACULTY OF ENGINEERING**B.E. 4/4 (Inst.) I - Semester (Main) Examination, November / December 2016****Subject : Opto Electronics Instrumentation****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 Write the Einsteins equation. (3)
- 2 Define Q switching. (2)
- 3 List different classes of Laser safety. (2)
- 4 Compute Numerical Aperture and Acceptance angle of the optical fibre given refractive indices of core = 1.50 and cladding = 1.45. (3)
- 5 List Industrial application of Laser. (2)
- 6 Define Fiber splicing. (2)
- 7 Write the important features of O.T.D.R. (3)
- 8 Compare Active and passive fiber sensor. (3)
- 9 When a LED has 2 volts applied to its terminals, it draws 100 mA and produces 2mW optical power? What is the LED's conversion efficiency from electrical to optical power? (3)
- 10 List application of plasma Display. (2)

PART – B (50 Marks)

- 11 Write classification of Lasers and explain ND-YAG with its energy level diagram. (10)
- 12 With a diagram explain principle and working operation of Laser Interferometer and mention its applications. (10)
- 13 List different types of Fiber fabrication Techniques and with necessary diagram explain in detail any one method of Fibre fabricated technique. (10)
- 14 Explain the measurement of the following parameter with optical fibre sensor (10)
(a) Current (b) Temperature
- 15 With a circuit diagram explain the principle operation and characteristics of a LED and photo coupler. (10)
- 16 Explain : (5)
(a) Mode Locking with necessary diagram. (5)
(b) Pube echo Technique (5)
- 17 Explain (5)
(a) Process of fibre drawing and coating (5)
(b) Phase modulated sensor in fibre optic instrumentation (5)

FACULTY OF ENGINEERING**B.E. 4/4 (ECE) I-Semester (Main) Examination, November / December 2016****Subject : VLSI Design****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 | Write the syntax to declare 4 variables with name 'a' and 4 bits wide. | 2 |
| 2 | Write verilog HDL code for 2 x 1 mux in gate level. | 3 |
| 3 | What is logic synthesis? | 2 |
| 4 | Differentiate between blocking and non-blocking assignments. | 3 |
| 5 | What complications arise due to body effect? | 2 |
| 6 | What are the advantages of CMOS circuits over other MOS circuits? | 3 |
| 7 | Why a good design should follow lambda based design rules? | 2 |
| 8 | What is sheet resistance? Give equation. | 3 |
| 9 | Compare DRAM with SRAM. | 2 |
| 10 | Design 2 input AND gate using 2 x 1 mux. | 3 |

PART – B (50 Marks)

- | | | |
|-------|--|---|
| 11 a) | What are the features of verilog HDL? | 5 |
| b) | Explain the concept of simulation along with its components. | 5 |
| 12 a) | Explain compiler directive with examples. | 2 |
| b) | Explain timing control in verilog HDL with examples. | 8 |
| 13 a) | Derive the equation for IDs taking channel length modulation into account. | 6 |
| b) | Design CMOS EXOR gate. | 4 |
| 14 a) | Draw stick diagram for 2 input NAND gate. | 4 |
| b) | Explain about BiCMOS inverter. | 6 |
| 15 a) | What are the draw backs of carry look ahead adder? | 2 |
| b) | Design 4 bit barrel shifter. | 8 |
| 16 a) | Draw and explain components of verilog module. | 5 |
| b) | Draw 1 bit full adder with 32/28 transistors. | 5 |
| 17 | Write short notes on : | |
| a) | Synthesis design flow | 5 |
| b) | Estimation of CMOS inverter delay | 5 |

FACULTY OF ENGINEERING**B.E. 4/4 (M/P/AE) I-Semester (Main) Examination, November / December 2016****Subject : Metrology and Instrumentation****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (10 x 2.5 = 25 Marks)**

- 1 Write a short note on precision polygon.
- 2 Distinguish line standards from end standards.
- 3 Write the applications of tool makers microscope.
- 4 Define roundness error with the help of sketch.
- 5 Classify the surface roughness parameters.
- 6 Sketch a screw thread and indicate salient features.
- 7 Differentiate between threshold and resolution.
- 8 Write short notes on measurement of torsion by strain gauges.
- 9 Discuss specific applications of materials used in thermo-couples.
- 10 Explain the use of extension wires in thermocouples.

PART – B (5 x 10 = 50 Marks)

- | | |
|--|---|
| 11 a) State and explain the Taylor's principle of plain limit gauges. | 5 |
| b) Write short notes on : | |
| i) Inside micrometer and ii) screw thread micrometer | 5 |
| 12 a) Explain with a neat sketch the principle, operation and uses of a optical projector. | 5 |
| b) Explain the roundness measurement with Talyround. | 5 |
| 13 a) Explain 2-wire method for measuring effective diameter of screw thread. | 5 |
| b) Write short notes on surface roughness measurement by profilometer. | 5 |
| 14 a) Draw the schematic diagram of generalized measurement system and explain the role of each element. | 5 |
| b) Explain different types of errors in instruments. | 5 |
| 15 a) How do you measure vacuum by using Pirani gauge? | 5 |
| b) Write short notes on series and parallel circuits in thermocouples. | 5 |
| 16 a) Discuss the uses of plug, ring and snap gauges. | 5 |
| b) Explain the working of back pressure type pneumatic comparator with a sketch. | 5 |
| 17 Write short notes on : | |
| a) Tomlinson gauges | 3 |
| b) Coordinate Measuring Machine (CMM) | 3 |
| c) Bourdon Pressure gague | 4 |

FACULTY OF ENGINEERING

B.E. 4/4 (CSE) I-Semester (Main) Examination, November / December 2016

Subject : Artificial Intelligence

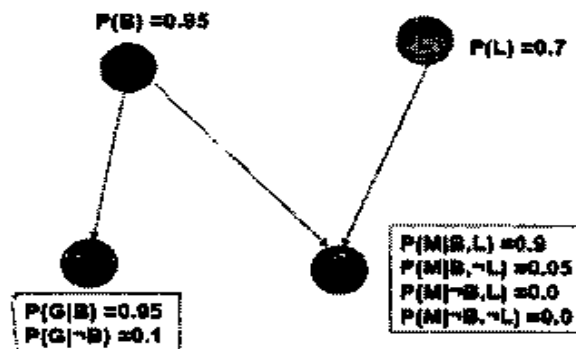
Time : 3 hours

Max. Marks : 75

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

PART – A (25 Marks)

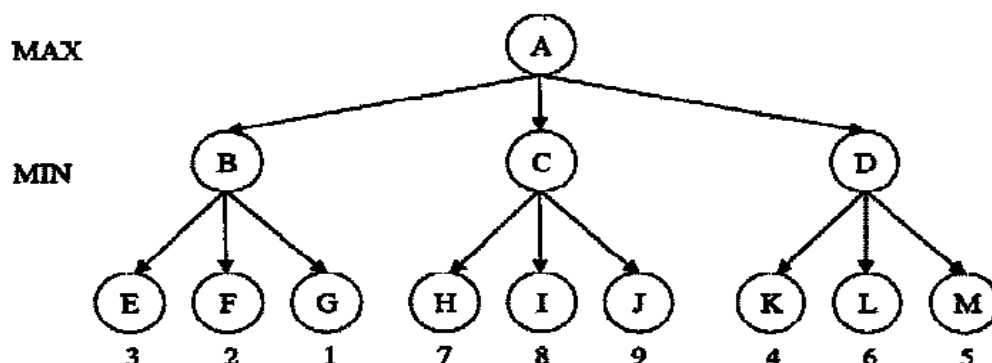
- 1 What is a rational agent? 2
- 2 Explain the importance of heuristic function in formed search. 2
- 3 Differentiate between Radial Basis Function (RBF) network and FFNN. 3
- 4 Obtain wff representation of the statement : Every dog chases come cat. 3
- 5 Compute joint probability, $p(G,M,B,L)$ from the given Bayesian network. 3



- 6 What is Sussman anomaly? 2
- 7 What is Information gain? 3
- 8 List out the applications where Natural language processing is used. 2
- 9 What is situation calculus? 2
- 10 Distinguish between crisp set and fuzzy set. 3

PART – B (50 Marks)

- 11 a) Explain about A* algorithm. 5
- b) Consider this game tree where the root is a maximizing node, and children are visited left to right.



- i) Compute the min max game value of nodes A, B, C, and D. 2
- ii) List the nodes (leaves or interior nodes) that alpha-beta algorithm prunes. 3

- 12 a) Describe the architecture and rule based expert system. 5
 b) Prove the following using resolution refutation method. 5
 $\{A \vee C, B \vee \sim C, \sim B, \sim A \vee S, \sim U\} \models \sim U \wedge S$
- 13 What is STRIPS planning system? Explain different lists used in defining the operators in STRIPS. Discuss the formal search methods and recursive STRIPS. 10
- 14 Discuss briefly about the applications of Neural Networks. Describe the architecture and learning rule of perception. 10
- 15 What is Natural Language Processing? Explain the various phases / steps in NLP. 10
- 16 Write short notes on :
 a) Decision tree learning 5
 b) Fuzzy inference processing 5
- 17 Convert the following into FOL and use resolution to prove the conclusion. 10

Anyone whom Mary loves is a football star.

Any student who does not pass does not play.

John is a student.

Any student who does not play is not a football star.

(Conclusion) If John does not study, then Mary does not love John
