Course Code: BT CSE 510   Max Time: 3 Hrs
Course Title: Software Engineering   Max Marks: 70

Instructions:
- Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carry two Marks).
- Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Question No.1:   7x2=14
     a. What is PSP? Indicate its significance.
     b. What makes software project management challenging? Elaborate.
     c. What is data dictionary? Discuss its relevance.
     d. What is data modelling? State its relevance.
     e. What is Software Architecture? Outline its importance.
     f. What is Clean Room software engineering? Discuss its significance.
     g. What is Boundary Value Analysis? How is it significant?

PART –II

Unit-I

2. a) What is software crisis? How is it overcome? Explain.   5
    b) What are Function-oriented metrics? How are these significant? Explain   5
    c) Differentiate between Software Process and Software Product.   4

or

2. a) What is software planning? What are the steps involved in this process? Explain. 5
    b) What are COCOMO models? What are its main elements? Discuss.   5
    c) What is PSP? What is its importance? Illustrate.   4

Unit-II

3. a) What is requirements engineering? What are the steps involved in this process? Discuss.   5
    b) What are Data Flow Diagrams? How are these significant? Illustrate.   5
    c) What is Behavioral modeling? How is it relevant? Explain.   4

or

3. a) What is system modelling? How is it relevant? Explain.   5
    b) What are software requirement specifications (SRS)? How is SRS document populated? Discuss.   6
    c) What is the concept of structured analysis? Illustrate.   3

Unit-III

4. a) What is software design? Discuss the design principles in detail.   6
    b) What is modularity? What role does it play in software design? Illustrate.   5
    c) What do you mean by control hierarchy? Explain.   3

or

4. a) What do you understand by software quality? What are important software quality attributes? Explain.   6

b) What is User Interface Design? What are the qualities of a good User Interface Design? Illustrate.   6

c) What is the concept of Transaction flow? State its significance.   2

or

4. a) What is coupling? What are its different types? How are these significant in software design? Explain.   6

b) What do you mean by design model? What are its main elements? Illustrate.   6

c) What is design documentation? Illustrate.   2

Unit-IV

5. a) Differentiate between Black-box and White-box testing.   5

b) What is software maintenance? What are its types? Illustrate their relevance.   6

c) Differentiate between Unit testing and Integration Testing.   4

or

5. a) What are CASE tools? How do you classify these tools? Illustrate.   5

b) What is SQA? What are the activities involved under SQA process? Explain.   5

c) How are software faults and failures inter-related? What are different types of software failure?   4

Central University of Haryana
Vth Semester Term End Examination June 2018
B.Tech. Programmes
Branch: Civil Engineering
Course Code: BT CE 510   Max Time: 3 hours
Course Title: Engineering Hydrology   Max Marks: 70

Instructions:

Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carry two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART-I

a) What do you mean by Maximum Depth - Area -Duration curve? Draw a typical DAD curve. 2
b) What is the effect of vapour pressure on evaporation process?   2
c) Distinguish between infiltration capacity and infiltration rate.   2
d) Explain the term rainfall excess(ER). How is ERH of a storm is obtained?   2
e) What are Design flood and standard project flood?   2
f) Define the terms (i) Aquifer (ii)   Aquiclude (iii) Aquifuge (iv)   Aquitard   2
g) What do you understand by Coefficient of transmissibility?   2

PART-II

UNIT I

2(a) A catchment area of 140 km² received 120 cm of rainfall in a year. At the outlet of the catchment the flow in the stream draining the catchment was found to have an average rate of 2.0 m³/s for 3 months, 3.0 m³/s for 6 months and 5.0 m³/s for 3 months. (i) What is the run off coefficient of the catchment? (ii) If the afforestation of the catchment reduced the runoff coefficient to 0.50, what is the increase in the abstraction from precipitation due to infiltration, evaporation and transpiration, for the same annual rainfall of 120 cm?   (7)

2(b) Given the following data, compute the average precipitation over the catchment

Isohyet(cm)	14 -12	12-10	10-8	8-6	6-4
Catchment area enclosed between isohyets (km²)	30	140	80	180	20

(7)

or

2(a) Explain various weather systems for precipitation with neat sketch.   (7)

2(b) Following data is obtained at a rain guage station by using self-recording rain gauge during a storm:

Time from beginning
Of storm (in minutes) 10   20   30   40   50   60   70   80   90
Accumulated
Rainfall (in mm)   19   41   48   68   91   124 152 160 166

Obtain the value of maximum intensities of this storm for various durations and plot a curve of maximum intensity vs duration. (7)

UNIT II

3(a) A reservoir with a surface area of 250 hectares had the following average values of climate parameters during a week: Water temperature = 20° C (e_w = 17.54 mm of Hg),

Relative humidity = 40%.

Wind velocity at 1.0 m above ground surface = 16 km/h.

Estimate the average daily evaporation from the lake by using Meyer's formula. (6)

3(b) The mass curve of an isolated storm in a 500 ha watershed is as follows

Time from Start(hr)	0	2	4	6	8	10	12	14	16	18
Cumulative rainfall(cm)	0	0.8	2.6	2.8	4.1	7.3	10.8	11.8	12.4	12.6

If the direct runoff produced by the storm is measured at the outlet of watershed as 0.340 Mm^3, estimate the Ø-index of the storm and rainfall excess. (8)

Or

3(a) Discuss about Hortron's equation for finding infiltration capacity. (6)

3(b) Using Penman's formula calculate consumptive use of rice for the month of February. Take the following data

Wind velocity measured at 2m height = 30km/day
Elevation of the area = 220 m
Relative humidity for February = 50%
Latitude = 22°N
Mean monthly temp = 16°C
Reflection coefficient = 0.20
α = 0.49, σ = 2.01x10^{-9} mm/day, n = 7.2, N = 11.42

H_a = 11.94 mm of water/day   N = 10.716 h

A = 0.86 mm/ degree centigrade e_w = 13.67 mm of Hg (8)

UNIT III

4(a) For a river, the estimated flood peaks for two return periods by the use of Gumbel's method are as follows:

Return Period (years)	Peak flood (m³/s)
50	40389
100	46300

Estimate the flood magnitude in this river will have a return period of 500 years? (6)

4(b) The ordinates of a 2-h unit hydrograph are given:

Time (h)	0	2	4	6	8	10	12	14	16	18	20	22
2-h UH ordinate (m³/s)	0	25	100	160	190	170	110	70	30	20	6	0

Determine the ordinates of a 4-h unit hydrograph by using S-curve hydrograph   (8)

or

4(a)   Explain the various methods of measurement of stage of a river.   (6)

4(b)   The ordinate of a 6-h unit hydrograph are given:

Time(h)	0	3	6	9	12	18	24	30	36	42	48	54	60	66
Ordinate of 6-h UH m3/s	0	150	250	450	600	800	700	600	450	320	200	100	50	0

A storm has three successive 6-h interval of rainfall magnitude of 3.0, 5.0 and 4.0 cm respectively. Assuming a ϕ index of 0.20 cm/h and a base flow of 30m3/sec, determine and plot the resulting hydrograph of flow.   (8)

UNIT IV

5(a) Describe methods of construction for tube wells?   (6)

5(b) A tube well fully penetrates a confined aquifer of thickness 30 m and coefficient of permeability 38 m/day. Determine the radius of the well if the yield required is 40 litre/second under a draw down of 4 m. Use radius of circle of influence as recommended by Sichardat.   (8)

Or

5(a) Derive an equation for steady state flow to wells in confined aquifer?   (6)

5(b) A gravity well has a diameter of 1 m. Before pumping is started the depth of water in the well is 50 m. When pumping is being done at the rate of 2000 litres per minute the downstream in a well 20 m away is 4 m and in another well 40 m away is 2 m. Determine(a) the radius of circle of influence (b) coefficient of permeability © drawdown in the well.   (8)

Course Code: BT CE 501   Max Time: 3 Hours
Course Title: Soil Mechanics   Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub
Question carry two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Question No.1 $(7 \times 2 = 14)$
(a) Differentiate between soil in saturated and soil in submerged condition?
(b) Define sensitivity and thixotropy.
(c) Differentiate between discharge velocity and seepage velocity.
(d) What is soil liquefaction?
(e) What are the assumptions made in Boussinesq theory?
(f) What is the difference between compaction and consolidation?
(g) Define over consolidated and normally consolidated soil.

PART –II
Unit-I

Question No.2
(a) A saturated specimen of undisturbed clay has a volume of 22.5 cm³ and mass of 35 g. After
oven drying the mass reduces to 20 g. Find the moisture content, specific gravity of solids,
void ratio and dry density.   (6)
(b) Briefly discuss the structure of clay mineral montmorillonite.   (4)
(c) The liquid limit and plastic limit of a soil are 65% and 31% respectively. The natural water
content is 25%. Find liquidity index. If 24% of soil by weight is finer than 2 μm, determine
the activity number.   (4)
                                      Or
Question No.2
(a) The plastic limit of a soil is 25% and its plasticity index is 8%. When the soil is dried from
its state at plastic limit, the volume change is 25% of its volume at plastic limit. Similarly
the corresponding volume change from the liquid limit to dry state is 34% of its volume at
liquid limit. Determine the shrinkage limit and shrinkage ratio.   (7)
(b) Explain Indian Standard Soil Classification system for classifying fine grained soil.   (7)

Unit-II

Question No.3
(a) Compute the total, effective and pore pressure at a depth of 20 m below the bottom of a
lake 6 m deep. The bottom of lake consists of soft clay with a thickness of more than
20 m. The average water content of the clay is 35% and the specific gravity of soil may
be assumed to be 2.65. What will be the change in effective stress when the water level in
the lake rises by 2 m.   (8)
(b) Differentiate between Standard Proctor Test and Modified Proctor Test. List out various
factors affecting compaction of soil.   (6)

Or

Question No.3

(a) Derive the expressions for equivalent permeability for flow parallel and perpendicular to stratification in the soil.

(8)

(b) What is quicksand condition? Under what circumstances can it occur? What are its preventive measures?

(6)

Unit-III

Question No.4

(a) Undisturbed samples were collected from a 3 m thick clay stratum which lies between two sand strata. A laboratory consolidation test was performed on a 2.5 cm thick sample of clay. During the test water was allowed only to drain at the top of the sample. The time required for 50% consolidation was found to be 35 minutes. Determine the time required for 60% and 90% consolidation in the field.

(7)

(b) Write short note on approximate stress distribution methods for loaded areas.

(4)

(c) Differentiate between compression index and coefficient of consolidation.

(3)

Or

Question No.4

(a) What are the assumptions made in Terzaghi one dimensional consolidation theory? Also determine various non-dimensional parameters as defined in the solution of Terzaghi's one dimensional theory?

(5)

(b) Briefly explain Newmark's influence chart.

(4)

(c) A soil has a compression index of 0.28. At a stress of 120 kN/m² the void ratio was 1.02. Calculate the void ratio if the stress in the soil is increased to 180 kN/m² and total settlement of the stratum of 6 m thickness.

(5)

Unit-IV

Question No.5

(a) Briefly explain direct shear test with its advantages and limitations.

(6)

(b) The shear strength parameter of soil are $c = 0.26$ kg/cm² and $\Phi = 21°$. Undrained triaxial tests are to be carried out on specimens of soil. Determine (i) The deviator stress at which failure will occur if cell pressure be 2.5 kg/cm², (ii) The cell pressure during the test if the sample fails when deviator stress reaches 1.68 kg/cm².

(8)

Or

Question No.5

(a) Describe in brief about various types of triaxial shear test based on drainage conditions.

(5)

(b) Sketch and discuss stress -strain and volume change relationship for dense and loose sand.

(4)

(c) A vane 10 cm long and 8 cm in diameter was pressed into soft clay at the bottom of borehole. Torque was applied and gradually increased to 45 N-m when the failure took place. Subsequently the vane was rotated so as to remould the soil. The remoulded soil was sheared at a torque of 18 N-m. Determine the shear strength of soil in natural and remoulded state and also the value of sensitivity.

(5)

Central University of Haryana
Fifth Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Electrical Engineering

Course Code: BT EE 501   Max Time: 3 Hours
Course Title: Power System Analysis

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1

(a) What is per unit system? What are the advantages of per unit system?
(b) Why Bus admittance matrix is preferred for load flow study?
(c) Why Majority buses in power system are load buses?
(d) Draw the zero sequence equivalent circuit of transformers.
(e) Why is 3-ϕ symmetrical fault more severe than a 3-ϕ unsymmetrical fault?
(f) Define critical clearing angle and critical clearing time.
(g) Why the neutral grounding impedance Zn appears as 3Zn in the zero sequence equivalent circuit.

PART –II

Q.2.   (a) How is existing impedance matrix modified? Discuss the possible alternatives.   (7)

(b) The parameters of a 4-bus system are as under: (7)

Bus code	line impedance (PU)	Changing admittance (PU) Ypq/2
1 – 2	0.2 + j 0.8	j 0.02
2 – 3	0.3 + j 0.9	j 0.03
2 – 4	0.25 + j 1	j 0.04
3 – 4	0.2 + j 0.8	j 0.02
1 – 3	0.1 + j 0.4	j 0.01

Draw the network and find bus admittance matrix.

OR

Q.2.   (a) Why the admittance matrices are more suitable for load flow study?   (7)
Explain the procedure for formulation of admittance matrix.

(b) For the power system network shown in Fig: below draw the oriented (7)
graph, (ii) formulate bus incidence matrix, basic cut set incidence matrix
and basic loop incidence matrix.
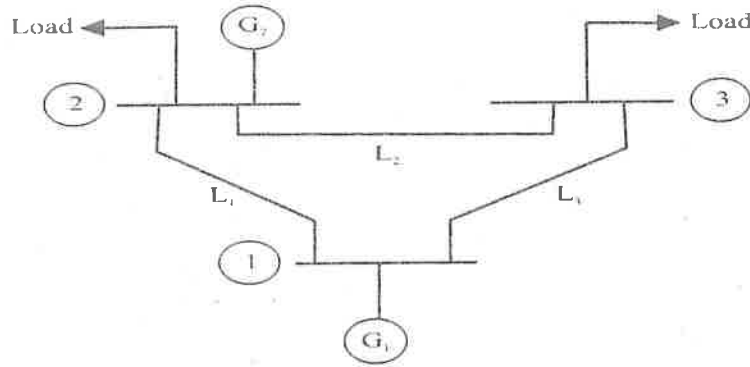
Q.3 (a) Derive the expression for fault current by symmetrical component's method (7)
for single line to ground fault.

(b) A 30MVA, 11KV generator has $Z_1 = Z_2 = j\ 0.2$pu, $Z_0 = j\ 0.05$ pu. A line to (7)
ground fault occurs on the generator terminals (i) Find the fault current and
line to line voltage during fault conditions. Assume that the generator neutral
is solidly grounded and that the generator is operating at no load and at rated
voltage at the occurrence of fault. (ii) Find the line current for a 3-phase fault.

OR

Q.3 (a) Derive the necessary equation to determine the fault current for single line (7)
to line (LL) fault. Draw a diagram showing the interconnection of sequence
network.

(b) A 25MVA, 13.2kV alternator with solidly grounded neutral has a (7)
subtransient reactance of 0.25pu. The negative and zero sequence reactance
are 0.35 and 0.1pu respectively. A single line to ground fault occurs at the
terminals of an unloaded alternator. Determine the fault current and the line
to line voltage; neglect resistance.

Q.4 (a) Explain different type of buses and variables in given power system. Also (7)
derive steady state load flow equation. Also give assumptions and
restrictions for solving load flow equation.

(b) Explain Gauss-Siedal method for load flow studies. (7)

OR

Q.4 (a) Explain Newton Raphson method for load flow analysis with the help of flow (6)
chart.

(b) In the two bus power system, line 1-2 has the series impedance of (8) (0.04+j0.12) pu with negligible line charging. The generation and load data is given in the table.

Bus No.	Type	Generation (pu)		Load (pu)	
1	Slack	-	-	-	-
2	PV	0.3	-	0.6	0.2

The slack bus voltage is (1+j0). The voltage magnitude at bus 2 is to be maintained at 1.05 pu and the generator at this bus has Q-generation limits between 0 and 0.5 pu. With (1+ j0) pu initial voltage at bus 2, determine its voltage at the end of first iteration, using GS load flow model.

Q. 5 (a) Derive the swing equation from the fundamentals and hence explain the (6) equal area criterion.

(b) In the power system shown in Fig. below three phase fault occurs at P and (8) the faulty line was opened a little later. Find the power output equations for the pre-fault, during fault and post-fault conditions. If the generator was delivering 1.0 p.u. just before the fault occurs, calculate critical clearing angle.
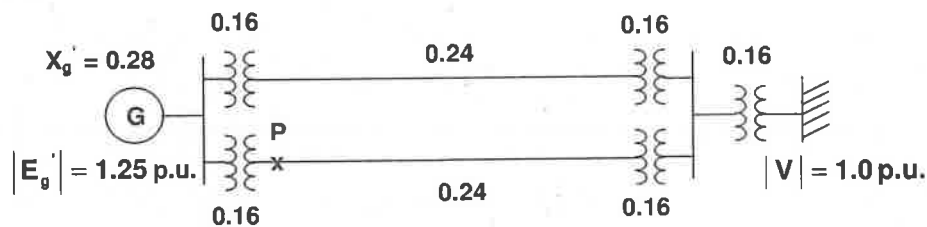
OR

Q. 5 (a) A 20 MVA, 50 Hz generator delivers 18 MW over a double circuit line to an (8) infinite bus. The generator has KE of 2.52 MJ / MVA at rated speed and its transient reactance is $X = 0.35$ p.u. Each transmission line has a reactance of 0.2 p.u. on a 20 MVA base. $E = 1.1$ p.u. and infinite bus voltage $V = 1.0$ p.u. A three phase fault occurs at the mid point of one of the transmission lines. Obtain the swing curve over a period of 0.5 sec. if the fault is sustained.

(b) What do you understand by transient stability? What are the methods to (6) improve transient stability, explain?

Course Code: BT EE 508   Max Time: 3hrs
Course Title: Electromagnetic Field Theory   Max Marks: 70

Instructions:

Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).

Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1

(a) State divergence theorem.

(b) Define Laplacian of a scalar.

(c) State Gauss's law in integral form.

(d) What is polarization?

(e) State Ampere's law.

(f) Write Maxwell's equations for magnetic field in point form.

(g) What is displacement current?

PART –II

Q. No.2

(i) Define differential surface in three different coordinate systems.   (4)

(ii) Use the spherical coordinate system to find the surface area of a strip $\alpha \leq \theta \leq \beta$ on a spherical shell of radius R.   *(10)*

OR

Q. No.2

For a vector field $R = xyz^2 \, a_x - xy^2z \, a_y + x^2yz \, a_z$ evaluate the surface integral for a surface of a unit cube.   (14)

Q. No.3

What is electric dipole? Derive a relation for electric potential due to an electric dipole and there from obtain the expression for electric field intensity.   (14)

OR

Q. No.3

(i) Explain continuity of current.   (4)

(ii) Derive an expression for energy density in electrostatic field and there from obtain the expression for energy stored in a capacitor.   (10)

Q. No.4

(i) State Ampere's circuital law in point form.   (3)

(ii) Find the current density within and outside the conductor for a long, straight conductor having radius of cross-section R and carrying a current I.   **(11)**

OR

Q. No.4

What is magnetization? For a ferrite material operating in linear mode with flux density $B = 0.05\ T$, calculate the value of magnetization. Assume $\mu_r = 50$. (14)

Q. No.5

(i) Explain wave propagation in free space using Maxwell's equation and obtain the expression for velocity of wave and wave number. (7)

(ii) State and develop poynting theorem from Maxwell's equation. (7)

OR

Q. No.5

(i) What is skin depth? Derive an expression for it. (8)

(ii) For silver, the conductivity $\sigma = 3.0\ MS/m$. At what frequency will the skin depth δ be 1 mm? (6)

_____END_____

Programme : B.Tech. (Civil Engineering)

Semester : Fifth   Session : 2018-19
Course Title : Transportation Engineering-I   Max. Time : 3 Hours
Course Code : BT CE-503   Maximum Marks : 70

Instructions:

1. Question Number **one (Part-I)** is compulsory and carries total 14 marks (Each sub Question carry two Marks.)

2. Question Number 2(two) to 5(five) carry fourteen marks each with internal choice.

Part-I

1. (a) What are the recommendations of Jayakar Committee?

   (b) What is stopping sight distance?

   (c) What is the purpose of conducting plate load Test?

   (d) Draw a typical Valley curve?

   (e) Write desirable properties of Sub base.

   (f) Define the terms "Regulatory signs".

   (g) A horizontal curve of radius 60m is encountered with ruling gradient of 6%. Find the grade compensation and the compensated gradient at the curve.

PART-II

2. (a) Give classification of highways according to Nagpur road plan. Give formula of Length of NH, SH and MDR as per Nagpur road plan.   [7]

   (b) Explain what the saturation system is considered a rational method to decide the final road network system.   [7]

OR

2. (a) Briefly explain with a sketch the Macadam's method of road construction. Why is this method considered better and more scientific compare to the previous methods?   [7]

   (b) What are the various methods of classifying road? Briefly outline the classification based on location and function as suggested in the Bombay road plan.   [7]

3. (a) Calculate the safe overtaking sight distance for a design speed of 100 kmph. Assume all other data suitably as per IRC. [7]

   (b) Enumerate the steps for practical design of super elevation considering mixed traffic flow. [7]

OR

3. (a) Explain summit and valley curves and the various cases when these are formed while two different gradients meet. [7]

   (b) Why are overtaking zones provided? What is the basis of deciding its length? Draw a neatsketch and show the signs to be installed and their position. [7]

4. (a) Explain spot speed, running speed, space-mean speed, time-mean speed and average speed. [7]

   (b) How road-side interview method of O & D studies carried out? Mention advantages and limitations of this method. [7]

OR

4. (a) Show the conflict points at the following types of intersections:
   (i) Cross-roads, both roads two-way (ii) Cross-roads, both roads one-way [7]

   (b) Explain the various factors to be considered during design of traffic signals by IRC method. [7]

5. (a) Explain CBR and the test procedure in the laboratory. How are the results of the test obtained and interpreted? [7]

   (b) Explain briefly the step by step procedure Marshall method of bituminous mix design. [7]

OR

5. (a) How are Flakiness Index and Elongation Index values determined in the laboratory, Discuss the Importance of the test. [7]

   (b) Explain emulsions and cut backs. How are they prepared? Give their uses. [7]

Central University of Haryana
ODD Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Printing and Packaging Technology

Course Code: BT PPT 509
Course Title: Paperboard & Corrugated Packaging

Max Time: 3Hrs
Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1
    (a) Composite Cans
    (b) Multiwall Paper Sacks
    (c) Rigid Packaging
    (d) Strip and Flat bags
    (e) Write any four Flexible packaging materials
    (f) Role of MD and CD of Paper in Packaging
    (g) Write common corrugated boards style

PART –II

Q. No.2 What is the major impact of various appearance properties on paperboard-based packaging? Discuss in detail.
OR
Q. No.2 Discuss various performance properties of paper-based packaging.

Q. No.3 Explain various paperboards used in manufacturing semi-rigid/rigid containers.
OR
Q. No 3 Describe a wide range of papers used to meet the packaging requirement.

Q. No.4 Explain Moulded Pulp Packaging and Fibre Drum.
    OR
Q. No .4 Discuss packaging materials and steps involved in manufacturing of paperboard-based liquid packaging.

Q. No.5 Describe the functions of corrugated board Pallets and Cushions in corrugated packaging.
OR
Q. No.5 Write note on following:
    (a) Flat crush strength (b) Edge crush strength (c) Compression strength

Central University of Haryana
Fifth Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch:
Course Code: BTCSE-502
Course Title: Computer Graphics and Multimedia

Max Time: 3 hours
Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks). Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1
(a) What are the main differences between the target media for JPEG and GIF compression?
(b) What are the interlacing and non-interlacing displays?
(c) Show that the multiplication of transformation matrices for 2 successive rotations is commutative.
(d) What do you understand by shading?
(e) Give the scaling matrix to double and half the size of a rectangle.
(f) What are the merits and demerits of plasma panel display?
(g) What characteristics of the human visual system can be exploited for the compression of color images and video?

PART –II

Q. No.2 What are the desirable characteristics of a line drawing algorithm? Discuss the simple DDA using suitable example.

OR

Q. No.2 Write the Bresenham's line drawing algorithm and discuss its merits and demerits over DDA.

Q. No.3 What do you mean by 2-D transformation? Given a rectangle on the screen, describe the steps to double the size of the rectangle taking care that the centre of the rectangle does not change.

OR

Q. No 3 What do you understand by clipping? Explain the midpoint subdivision algorithm for clipping.

Q. No.4 What do you mean by hidden surface elimination? Discuss Z-buffer method for detecting visible surface.

OR

Q. No .4 What do you understand by projection? Explain the perspective projection in 3-dimensional graphics.

OR

Q.No.4 Write the Scan-line coherence algorithm for hidden surface elimination? Discuss the drawbacks of this algorithm.

Q. No.5 What do you mean by lossy compression? Write a detailed note on JPEG compression.

OR

Q. No.5 What are the types of compression techniques? How RIFF file format is different from TIFF file format? Discuss.

Central University of Haryana
V Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Printing Technology

Course Code: BTPPT-507
Course Title: Wood, Glass and Metal Based Packaging

Max Time: 3 hrs.
Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2 (two) to 5 (five) carry fourteen marks each with internal choice.

PART -I

Q. No.1 Write short notes on:
(a) Classification of Timber.
(b) Types of loads.
(c) Types of Glass.
(d) Tin plate.
(e) GI Drum.
(f) Impact test.
(g) Degree of protection.

PART –II

Q. No.2 Discuss the design factor, qualities of timber and effect of moisture in relation to wood based packaging.

OR

Q. No.2 Discuss in detail on the various considerations of wooden container.

Q. No.3 Discuss on the classification, selection and size & weight of Crates in detail.

OR

Q. No3 Write notes on   A) Consideration for box design   B) Wooden box styles
C) Packaging considerations

Q. No.4 Discuss the various properties and types of glass and applications of glass in packaging.

OR

Q. No.4 Write notes on   A) Annealing testing   B) Thermal shock test   C) Density test

Q. No.5 Discuss the various properties of   A) Black plate   B) Containers
C) Aluminum Foil

OR

Q. No.5 Write a detailed note on modern trends in metal based packaging.

Central University of Haryana
ODD Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Computer Science and Engineering
Max Time:3hrs
Max Marks:70
Course Code: BT CSE 506
Course Title: Wireless Communication

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1

(a) Describe wireless communication system.
(b) Explain the term wireless in local loop (WLL).
(c) What is handoff?
(d) Explain tracking and grade off services.
(e) Describe spectrum allocation.
(f) Differentiate between FDMA and TDMA.
(g) Explain the concept of personal area network.

PART –II

Q. No.2 Describe Bluetooth and its protocol stack in detail.
OR
Q. No.2 What is the evolution of wireless communication system? Explain.

Q. No.3 Differentiate between analog and digital cellular system.
OR
Q. No. 3 What is handoff? Describe handoff strategies in detail.

Q. No.4 What do you mean by multiple access technique? What are various multiple access techniques? Discuss.
OR
Q. No.4 What is wireless networking? Differentiate between wireless and fixed telephone networks in detail.

Q. No.5 What is the concept of intelligent cell? Describe applications of intelligent micro cell systems in building communication.
OR
Q. No.5 What is the architecture of GSM? Explain.

Course Code: BT CE 512   Max Time : 3 Hours
Course Title: Ground Improvement Techniques   Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub
Question carry two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

$(7 \times 2 = 14)$

Question No.1
(a) What is the application of dewatering in ground improvement?
(b) Write the concept behind soil reinforcement.
(c) What are the objectives of grouting?
(d) Name any two industrial wastes used in stabilization of soils.
(e) What do you understand by preloading?
(f) What is the effect of water content on compaction of soil?
(g) List various soil stabilization methods.

PART –II
Unit-I

Question No.2
What do you understand by ground improvement? What is the need of ground
Improvement? Explain in detail any four methods of ground improvement in cohesionless
soil.   (14)

Or

Question No.2
(a) What are various types of rollers used in compaction of soil? Differentiate between
sheep's foot and vibratory rollers used in the surface compaction of granular soils.   (8)
(b) Explain in detail mechanical stabilization of soils.   (6)

Unit-II

Question No.3
(a) Explain vertical sand drains with a neat sketch. How it is used for soil improvement. (8)
(b) Explain dynamic compaction and explosive compaction technique of densification of
soil.   (6)

Or

Question No.3
(a) Explain in detail with neat sketches the vibroflotation technique of densification of deeper
layers of granular soils and its quality control.   (10)
(b) Distinguish between compaction and consolidation.   (4)

Unit-III

Question No.4
(a) Define Grouting. Explain in detail various grouting methods with neat sketches.   (10)

(b) What is soil reinforcement? What are the various reinforcing materials used in ground improvement? (4)

Or

Question No.4 (14)
Write short notes on:
(a) Soil Dowels
(b) Soil nailing
(c) Reticulated micropiles
(d) Soil anchor

Unit-IV

Question No.5
(a) Discuss the assumptions and principles of reinforced earth mechanism. Explain the design steps of reinforced earth walls. (10)
(b) Write short note on sheet pile wall. (4)

Or

Question No.5
(a) What is reinforced earth structure? What are the various applications of reinforced earth in ground improvement? (6)
(b) Explain with neat sketches the function of geotextiles as separators, filters, drains and reinforcement. (8)

Note: This question paper has two sections: Section A, Section B.
     Use of IS 456:2000 IS Allowed.
Attempt (i) All Question are compulsory from Sec.-A.
       (ii) Any FOUR from Sec.-B, selecting at least one from each unit.

<div align="center">

Section –A   **14 Marks**

(Each question carries 2 marks)

</div>

Question no. 1

a) Explain Effective span and effective width of flange in Flanged Beam as per IS Specification.
b) Explain the difference between Nominal Mix and Design mix of concrete.
c) Explain Shear stress, Development length and critical section for design shear with neat sketch.
d) Describe the moment of resistance of T-beam.
e) Explain slenderness limits and minimum eccentricity for column.
f) How footings are classified?
g) What is nominal cover?

<div align="center">

Section – B   **56 Marks**

(Attempt any four question, selecting at least one from each unit. Each question carries 14 marks)

Unit-1

</div>

2 Determine the mix proportions for a concrete mix with following Specification

Characteristic Strength Required to be 35 N/mm2	
Type of Cement	43 Grade OPC
Specific Gravity of cement	3.15
Maximum nominal size of Aggregate	20mm
Specific Gravity of Coarse Aggregate	1.7
Fine Aggregate	Zone-111
Specific Gravity of Fine Aggregate	1.6
Water Absorption	1%

Workability	Medium, Slump (50-75mm)
Exposure Condition	Severe
Chemical Admixture	Not Used
Degree of Supervision	Good

or

2. (a) Discuss the difference between working stress method , Ultimate load Method and Limit state method .

   (b) Explain the stress strain relationship for steel.

Unit-2

3. Design the section of a doubly reinforced beam to resist a bending moment of 185000 Nm. The section of the beam is restricted to 350 x 750 mm. Assume 50mm effective cover. M20 grade of concrete and Fe-415 reinforcement is used.

or

3. An R.C.C beam is required to carry a uniformly distributed load of 25 kN/m inclusive of its self weight. The effective span of the beam is 8m. Design the beam for flexure by limit state method. Use M30 concrete and Fe-415 Steel.

Unit-3

4. (a) Derive the expression for Anchorage bond and Flexure bond.

   (b) Determine the reinforcement required for a beam of size 300mm x 600mm subjected to a factored bending moment of 150 kNm, factored shear force of 100 kN and factored torsional moment of 50 kNm. Use M20 concrete and Fe 415 steel.

or

4. Design a circular column of diameter 400 mm subjected to a load of 1200 kN. The column is having spiral ties. The column is 3m long and effectively held in Position at both ends but not restrained against rotation. Use M25 concrete and Fe 415 steel.

Unit-4

5. (a) Explain reinforcement requirement for different structural members as per IS Specification.

   (b) Explain requirement of good detailing for cover to reinforcement for various Structural members.

or

5. Design a simply supported roof slab for a room 7.5 m x 3.5 m clear in size. The slab is carrying an imposed load of 5kN/m². Use M20 mix and Fe 415 steel.

Course Code: BT EE 506   Max Time: 3 Hrs
Course Title: ANALOG & DIGITAL ELECTRONIC   Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carrytwo Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Question No.1

(A) What do you mean by DC load line? Explain. (2)

(B)Name the two factors that determine the voltage gain of an amplifier. (2)

(C) Define Common Mode Rejection Ratio. (2)

(D)Give four ideal characteristics of OP-AMP. (2)

(E)Draw transfer characteristic of FET. (2)

(F)Draw GATE diagram and truth table R-S flip- flop. (2)

(G)Define demultiplexer. (2)

PART –II

Unit-I

Question No.2

(A)   Draw and explain RC coupled BJT amplifier. (7)

(B)   Draw and explain construction of FET with its characteristic.(7)

OR

Question No.2

(A)   Explain class AB push pull amplifier with suitable diagram.(5)

(B)   What do you mean by BJT biasing?Explain voltage divider bias in detail.(5)

(C)   Explain MOSFET as analog switch in detail.(4)

Unit-II

Question No.3

(A) Explain Wien-Bridge Oscillator with suitable diagram.(5)

(B) Explain Open loop and closed loop configurations of OP-AMP.(5)

(C) Define oscillator and explain the classification of oscillator.(4)

OR

Question No.3

(A) Explain LC oscillator with suitable diagram.(5)

(B) Explain the OP-AMP as Differentiator and ADDER with suitable diagram and equations.(5)

(C)Define four OP-AMP parameters.(4)

Unit-III

Question No.4

(A) What is filter? Explain any two type of low pass filter.(5)

(B) Explain clipper and clamper circuits with suitable diagram.(5)

(C) Explain associative and distributive law with examples.(4)

OR

Question No.4

(A)Explain Schmitt Trigger circuit in detail.(4)

(B)Explain SOP and POS form of K-map for three variables.(6)

(C)Write short note on any one of the following.   (4)

1. Self-tuning filter

2. Switched capacitor filter.

Unit-IV

Question No.5

5 (A) Explain master-slave J-K flip flop in detail. (6)

(B) Explain multiplexer with block diagram. Write the truth table for 4:1 multiplexer. (6)

(C) Write short note on any one of the following (2)

1. PROM
2. EPROM
OR

Question No.5

5. (A) Explain the design of Half adder & full adder device with truth table and diagram.(6)

(B)Draw the logic symbol and construct the truth table for each of the following gates and write the output equations;

1. Two input NAND gate   (2)

2. Three input AND gate   (2)

3. Single input NOT gate   (2)

(C) Write short notes on any one of the following   (2)

Static RAM
Dynamic RAM

Central University of Haryana
ODD Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Computer Science Engineering 5th Semester

Course Code: **BT CSE 503**

Course Title: **Theory of Computation**

Max Time: 3hrs

M. M.: 70 marks

Instructions:

Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).

Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

$7*2=14$

Part- I

1. What is Non-deterministic automata?
2. Write regular expression for the set of all strings of 0s and 1's not containing 101 as substring.
3. What is ambiguity?
4. State Chomsky Normal Form theorem.
5. When is PDA said to be deterministic?
6. Define Turing Machine.
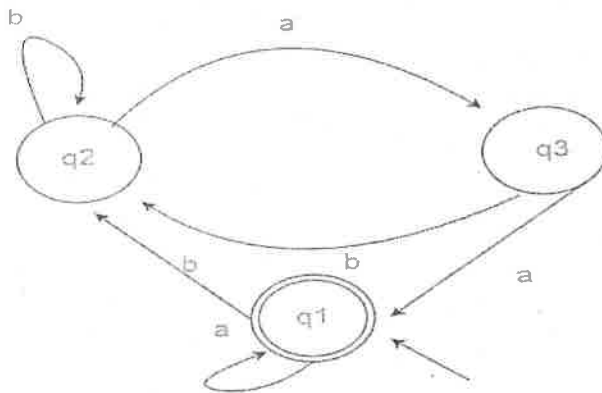7. When is a language said to be recursively enumerable?

Part- II

2. Determine DFA from a given NFA

   $M = (\{q_0, q_1\}, \{0, 1\}, \delta, q_0, \{q_1\})$ where δ is given by

   $\delta(q_0, 0) = \{q_0, q_1\}, \delta(q_0, 1) = \{q_1\}, \delta(q_1, 0) = \varphi, \delta(q_1, 1) = \{q_0, q_1\}$

OR

Generate the regular expression for the given below finite automata.

3. a. What is Finite Machine? Explain the properties and limitations of finite state machines.
   b. Explain Pumping Lemma for context free language with example.

OR

Write Minimization algorithm and explain it by taking suitable example.

4. a. Construct PDA for the language {WCW^R | W $\in$ (0,1) }.
   b. Differentiate Context free and Context sensitive grammar.

OR

a. What is ambiguous grammar? Check whether the given grammar is ambiguous or not?
   X → X+X | X*X |X| a
b. Convert the following grammar to GNF
   S => ABA | AB | BA | AA | A | B
   A => aA | b
   B => bB | b

5. a. What is Chomsky hierarchy of grammars? Also represent the relation between their respective languages.
   b. Construct Turing machine for the language {WW | W $\in$ (a,b)}.

OR

a. What are primitive recursive functions? Explain.
b. Show that halting problem is undecidable.

Central University of Haryana
Vth Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Electrical Engineering
Course Code: BT EE 502   Max Time: 3 Hrs
Course Title: Control System Engineering   Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1
  a) Compare open loop and closed loop control systems.
  b) Define the rise time and maximum overshoot with their mathematical formula.
  c) How do you find type and order of the system?
  d) List the advantages and limitations of frequency response methods.
  e) Define the Nyquist stability criterion.
  f) State the necessary conditions for the stability.
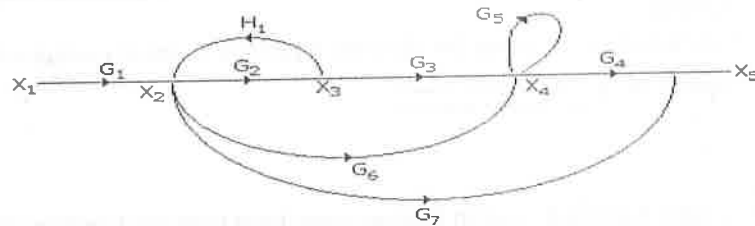 g) Why is compensation necessary in feedback control systems?
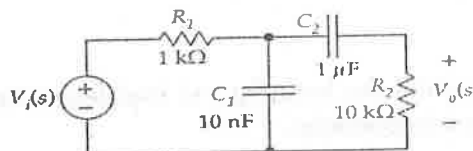
PART –II

Q. No.2
  a) Draw F-V analogous circuit for the mechanical system shown in fig. with necessary equation. (5)
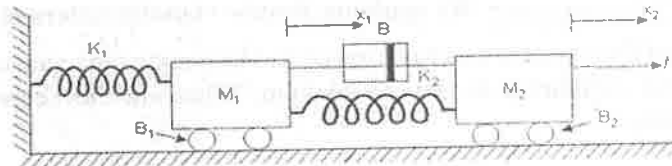
  b) For a signal flow graph shown in figure below, determine the transfer function using Masons gain formula. (5)
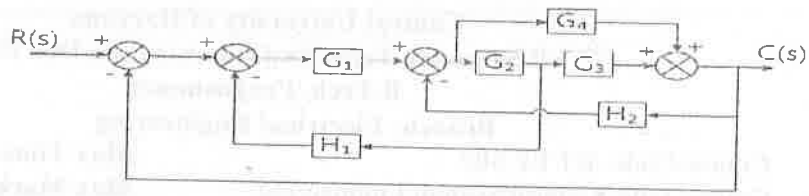

  c) Determine the transfer function of the network shown in fig. below. (4)

OR
Q. No.2
  a) Simplify the following diagram using block diagram reduction method and find the C(s)/R(s) (8)

b) Discuss the working principle of A.C. servo motor, derive the mathematical model along with the block diagram for it. (6)

Q. No.3

a) A unit feedback control system is characterized by the following open loop transfer function $G(s) = \frac{20}{(s+1)(s+4)}$. Determine the closed loop transfer function, damping ratio, natural frequency and expression for the transient response for unit step input. (7)

b) For unit feedback control system, the open loop transfer function is $G(s) = \frac{10(s+2)(S+3)}{S(s+1)(S+4)(S+5)}$. Find the position ($K_p$), velocity ($K_v$), acceleration constants (K_a) and steady state error for the system for input $r(t)= (1+ 10t +10t^2)$. (7)

OR

Q. No 3

a) Using Routh Harwitz criterion, determine the stability of the system representing the characteristic equation $S^6+S^5+4S^4+2S^3+5S^2+S+2=0$ and comment on the location of the roots of the characteristics equation. (7)

b) The open loop transfer function of a unit feedback system is given by $G(s) = \frac{K}{(s+2)(S+4)(S^2+6S+25)}$. By applying Routh- Harwitz criterion, discuss the stability of closed loop system as a function of K. Determine the value of K which will cause sustained oscillation in the closed loop. What are the corresponding oscillation frequencies? (7)

Q. No.4

a) What are the conditions of magnitude and angle that a point on root locus will satisfy? (4)

b) Sketch the root locus for the unit feedback control system whose open loop transfer function is $\frac{K}{S(S+4)(S^2+4S+15)}$. (10)

OR

Q. No .4

For a unit feedback system having open loop transfer function $G(s) = \frac{10(s+10)}{S(s+2)(S+5)}$, draw the Bode plots and determine the gain margin and phase margin. Also comment on the stability of the system. (14)

Q. No.5

Discuss briefly about the lead, lag and lead-lag compensators with suitable diagram. Also explain their importance. (14)

OR

Q. No.5

How PI, PD and PID compensation will improve the time response of a system? Explain with suitable diagram and mathematical expressions. (14)

Central University of Haryana
ODD Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Printing & Packaging

Course Code: BT PPT 502
Course Title: Sheet Fed Offset Technology
Semester:- Fifth

Max Time: 3 Hours
Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1

(a) Basic principles of lithography.

(b) Categories of sheet fed offset press.

(c) Function of feeding unit.

(d) Role of side lay.

(e) What is doctor dwell?

(f) What is undercut?

(g) Function of delivery section.

PART –II

Q. No. 3

Write a detailed note on history of lithography.

or

Discuss in detail on safe handling of tools.

Q. No. 3

Write a detailed note on feeding unit of a sheet fed offset press.

or

Discuss on various inking system in detail.

Q. No. 4

List down the various constituents of fountain solution and discuss them in detail.

or

Discuss on pre-make ready and make-ready in a sheet fed offset press in detail.

Q. No. 5

List down various role and function of delivery section of a sheet fed offset press.

or

Discuss on printing machine maintenance in detail.

Course Code: BT PPT 503   Max Time: 03 Hours
Course Title: Cellulose Technology   Max Marks: 70

Instructions:

Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).

Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1.

(a) Mention the various raw materials used for papermaking.
(b) Define the screening method of pulping.
(c) Write about calendaring.
(d) Importance of recycling of paper.
(e) Define run ability of paper.
(f) Importance of paper conditioning in the press room.
(g) Define GSM.

PART –II

Q. No.2.   (a) Write on history of paper making.   (4)
(b) Explain the various sources of fibres for papermaking with their structure and properties. (10)

OR

Q. No.2.   (a) Write about the various non-fibrous materials used for papermaking?   (4)
(b) Explain the selection of fibres for papermaking with technical and economic
     considerations.   (10)

Q. No.3.   Explain in detail about stock preparation.   (14)

OR

Q. No 3.   Explain in detail about papermaking machine along with their different sections.
                                                                                       (14)

Q. No.4.   (a) Write the different sources and benefits of recycled paper.   (6)
(b) Explain in detail about the deinking system in papermaking.   (8)

OR

Q. No .4.   (a) Write notes on various coated paper and uncoated paper.   (7)
(b) Write about printability and importance of grain direction of paper.   (7)

Q. No.5.   Explain in detail about the various physical properties and different tests of paper.
                                                                                       (14)

OR

Q. No.5.   Explain in detail about the various strength properties and related tests of paper.
                                                                                       (14)

Central University of Haryana
ODD Semester Term End Examination Dec 2018
B.Tech. Programmes
Branch: Electrical Engineering
Course Code: BT EE 504   Max Time: 3 Hrs
Course Title: Microprocessors and Interfacing   Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2(two) to 5(five) carry fourteen marks each with internal choice.

PART -I

Q. No.1

(a) What are interfacing logical devices.
(b) Define Nibble and word.
(c) Define Mnemonics and Program.
(d) Write basic operations of microprocessor with block diagram
(e) Write about different languages of digital computer.
(f) Explain different types of interrupts in 8085.
(g) Draw flag register of 8085.

PART –II

Q. No.2 (a) Explain evolution of microprocessor with its different generations.   (6)
        (b) What do you mean by Addressing mode, explain Different addressing modes used in 8085 with suitable examples?   (8)
                                                    OR
Q. No.2 (a) Draw architecture of 8085, explain its different unit.   (8)
        (b) What do you mean by pipelining and explain the concept of memory segmentation.   (6)

Q. No.3 (a) Draw the functional block diagram/architecture of 8085 microprocessor and discuss its operation. Discuss the functions of pins of 8085 microprocessor.   (7)
        (b) Discuss about the interrupt structure of 8085 microprocessor along with SIM and RIM instructions. List and explain the functions of 8085 vectored interrupts.   (7)
                                                    OR
Q. No 3 (a) Describe the programming model of 8085 microprocessor with a neat diagram.   (6)
        (b) Explain the following 8085 based assembly language instructions:(i) CNZ 5000H (ii) PCHL   (8)
        (iii) MOV B,M (iv) RET (v) XRA A (vi) STC (vii) LDA F800 H (viii) XCHG (ix) DAA (x) DAD B

Q. No.4 (a) What will be the output of the following program? (i) MVI A, 50H (ii) ORA   (6)
(iii) PUSH PSW (iv) HLT.
        (b) Give the architecture of 8253 with a neat diagram and control word format.   (8)
                                                    OR
Q. No .4 a) Draw and explain block diagram and pin configuration of IC-8253.   (7)
        b) Write an assembly level program to find square root of given number   (7)

Q. No.5 (a) Draw & explain the memory and I/O read cycle of 8085   (8)
        (b) Define timing diagram for op-code fetch cycle.   (6)
                                                    OR
Q. No.5 (a) Explain the maskable and non-maskable interepts available in 8085.   (9)
        (b) Differentiate between procedures and macros using certain examples.   (5)

Course Code: BTPPT-501   Max Time: 3 hrs.
Course Title: Technology of Flexography   Max Marks: 70

Instructions:
Question Number **one (PART-I)** is compulsory and carries total 14 marks (Each sub Question carries two Marks).
Question Numbers 2 (two) to 5 (five) carry fourteen marks each with internal choice.

PART -I

Q. No.1 Write short notes on:
(a) Rubber Plates
(b) Flying Spice Unwind
(c) Reverse Angle Doctor Blade System
(d) SCS
(e) UDC film master
(f) Anelox Role
(g) Impression Cylinder

PART –II

Q. No.2 Discuss the flexographic printing process, flexographic market and various flexographic products in detail.
OR
Q. No.2 Discuss the working of plate cylinder. Also discuss rubber plates and its kinds.

Q. No.3 Write notes on: Stack Press, CIC Press and Inline Press.
OR
Q. No3 Discuss the unwinding, tension and cooling systems of flexographic press.

Q. No.4 Write short notes on   A) Surface winders   B) Canter winders   C) Rewind Tension system in flexo press.
OR
Q. No.4 Discuss the working of   A) Continuous inking system   B) Dryers   C) Chrome Plating in flexography printing system.

Q. No.5 Explain the   A) Mounting Instructions   B) Press Room Practices   C) Bar Coding
OR
Q. No.5 Write a detailed note on flexographic market for today & tomorrow.