Duration: 3hrs   **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
         (2) Attempt any three questions out of the remaining five.
         (3) All questions carry equal marks.
         (4) Assume suitable data, if required and state it clearly.

1		Attempt any FOUR	[20]
	a	Explain Internet of Things- driver for digital business.	
	b	Explain different factors that affect consumer behavior	
	c	Describe the need of security in e-commerce	
	d	Explain different types of e-business	
	e	Explain building blocks of mobile commerce.	
2	a	Explain Drivers of digital business- Big Data & Analytics, Mobile, Cloud Computing, Social media.	[10]
	b	Explain Opportunities and Challenges in Digital Business.	[10]
3	a	What do you mean by digital business infrastructure? Name the different hardware and software that are used in the e-infrastructure.	[10]
	b	Explain ERP and its components.	[10]
4	a	Explain Different types of cryptographic algorithms with suitable example.	[10]
	b	Describe the use of firewalls and their types.	[10]
5	a	Explain SSL and PKI?	[10]
	b	Explain selling and buying in private e-markets with respect to business to business E-Commerce.	[10]
6	a	Discuss various Legal, Ethics and Societal impacts of E-commerce	[10]
	b	What is business plan? Why it is required in any business organization?	[10]

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(80 Marks)   Time: 3 hours

Note:
- i)   **Q. 1 is compulsory.**
- ii)   **Attempt any three out of remaining questions.**
- iii)   **Figures to right indicates full marks.**
- iv)   **Assume Suitable data if required.**

Q.1 a) Following table shows the activities, their interdependence and the durations.

Activity	A	B	C	D	E	F	G	H
Preceding activity	_	A	A	A	B	B	C	F, G
Duration (days)	4	3	5	7	5	10	5	7

Draw A-O-A network. Identify critical path. Determine Project duration. Work out all activity times and floats   -10M

b) Explain the contribution of Mr. Henry Fayol toward the development of management thoughts.   - 10M

Q.2 a) A small project is composed of seven activities as given below:

- i)   Draw project network
- ii)   Find expected duration, standard deviation and variance of all activities.
- iii)   What is the probability that the project will be completed 3 weeks earlier than the expected date?
- iv)   What is the probability of completing the project 1 week later than scheduled duration?   -- 10 M

Activity		Estimated duration (weeks)		
i	j	t_0	t_m	t_p
1	2	2	3	5
1	3	4	9	14
1	4	2	8	12
2	5	1	1	1
3	5	2	5	14
4	6	2	8	10
5	6	3	9	15

Z	-3.0	-2.0	-1.0	0	+1.0	+2.0	+3.0
P (%)	0.13	2.28	15.87	50	84.13	97.72	99.87

b) What do you understand by "Inventory Control?
   Also explain A-B-C Analysis in detail.   --10 M

Q.3a) For a small project, prepare a resource histogram based on EST and LST schedule.
Comment which schedule will you prefer? Why?   --10 M

Activity	A	B	C	D	E	F	G
Preceding activity	_	A	A	A	D	B	C, E, F
Duration (days)	4	5	10	3	5	4	4
Labours required	3	4	4	3	2	4	5

b) What is Resource Allocation? Also explain methods of Resource Allocation.   --10 M

Q.4) Find out optimum cost & optimum duration for the project whose details are given
below.   Indirect Cost of Project = Rs.2000/day   ---10 M

	Duration (days)		Cost (Rupees)	
Activity	Normal	Crash	Normal	Crash
A (1-2)	7	4	10000	14000
B (1-4)	9	6	12000	17000
C (1-3)	4	3	7000	9000
D (2-4)	6	3	11000	15000
E (3-4)	5	3	9000	13000
F (4-5)	7	5	12000	15000

b) What is the role of training and development in HRM   ---5M

c) What are the unique features of construction in India? Explain.   ---5M

Q.5 a) What do you understand by" Updating of Network? Also explain stepwise procedure
of Updating.   --10 M
   b) Explain: - 1) Payment of Wages Act   2) Workmen's Compensation Act   --10 M

Q.6) Write notes on followings (Any five)   --- 20 M

1) Injury Frequency Rate & Injury Severity Rate

2) Time Overrun & Cost Overrun

3) O S H A

4) Quality Manual & Quality Assurance

5) A – B - C analysis

6) Network Rules

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Time: 3:00   [Total Marks: 80]

1. Question No.1 is compulsory
2. Attempt any three questions out of remaining questions

Q1. Attempt any Four   (4x5)

a. Write a short note on "safety on building construction"
b. State the importance of safety policy
c. Which type of action will you take on habitual defaulters
d. What is the need of Safety Management?
e. State and explain causes of falls on site

Q2. Attempt any Two   (2x10)

a. Write a detail note on "Safety Measures and accident Prevention on Tunnels"
b. Explain in detail safety precautions while using lift and hoists

Q3. Attempt any Two   (2x10)

a. Write a detail note on "Safety Measures and accident Prevention on high rise buildings"
b. Discuss in detail about hazard recognition, evaluation and control.

Q4. Attempt any Two   (2x10)

a. Write a detailed note on safety precautions in using scaffolding and platforms
b. State and explain responsibilities on safety manager and employees

Q5. Attempt any Two   (2x10)

a. Explain in details safety tips while using crewel crane and tower crane

b. State and explain the importance of "national and state laws for worker safety and well-being"

Q6. Attempt any Two   (2x10)

a. Write a short note on "prevention of workplace violence"
b. State and explain various causes of fall hazards and their prevention measures.

[Time: 3 **Hours]**   **[Marks:80]**

N.B: 1. **Questions No. 1 is Compulsory.**
         2. **Attempt any three out of remaining Questions.**
         3. **Figures to the right Indicate full marks.**

Q.1	Attempt any Four write short notes on	**20**
a)	Significance of Environment	
b)	Global Warming	
c)	Scope of Environment Management	
d)	EMS certification	
e)	Forest Act	
f)	Eco-system and its types	
Q.2 a)	Discuss on environmental issues related to Indian context.	**10**
b)	Discuss on Air [P & CP] Act	**10**
Q.3 a)	Explain limiting factor and food chain as related to ecosystem.	**10**
b)	Write a note on each. Ozone layer depletion & Acid rain.	**10**
Q.4 a)	Discuss on corporate environment responsibity.	**10**
b)	What is sustainable development? What are the parameter effecting it?	**10**
Q.5 a)	What is ISO-14000? How does adoption of ISO-14000 practices benefits industries as well Environment.	**10**
b)	Discuss the functions of government as planning and regulatory agency.	**10**
Q.6 a)	Discuss the Atomic and Biomedical hazards as related to Global environmental concern.	**10**
b)	Discuss on Total Quality environmental management.	**10**

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(**3 Hours**)   [**Total Marks : 80**]

Notes
1. Question No **ONE** is **Compulsory**.
2. Answer any **THREE** from remaining.
3. Draw **FIGURES** wherever necessary. Figures to the right indicate full marks.
4. **WRITE** proper question / sub question numbers on the left margin allotted in answer sheet.
5. Each Question carries **EQUAL** marks.
6. **ASSUME** any additional data if necessary and state it clearly.

1.   **Attempt (Any 4)**

   a) State the importance of industrial waste treatment. What is proportioning?   **05**

   b) Explain any two methods of volume reduction**.**   **05**

   c) The average sewage flow from a city is 70×10^6 litres/day. If the average BOD is   **05**
280 mg/lit, compute the total 5 day oxygen demand in kg and population equivalent
of sewage assuming per capita BOD of sewage per day as 80gram.

   d) Discuss effluent standards and stream standards.   **05**

   e) What is Environment Audit?   **05**

2. **a)**   **10**

A wastewater treatment plant disposes of its effluent into a stream at a point A.
Characteristics of the stream at a location fairly upstream of A and of the
effluent are as below.

Item	Units	Effluent	Stream
Flow	m^3/sec	0.20	0.50
Dissolved oxygen	mg/lit	3.0	8.0
Temperature	^{0}C	26	22
BOD_5 at20^0C	mg/lit	35	3

Equilibrium concentration of dissolved oxygen C_S for the fresh water is as
follows:

Temperature ^{0}C	18	20	22	23	24	25	26
DO (mg/lit)	9.54	9.17	8.99	8.83	8.53	8.38	8.22

The velocity of the stream downstream of the point A is 0.1m/sec. Determine
the critical oxygen deficit and its location. Assume K_D at
20^0C(base10)=0.087per day and K_R at 20^0C(base10)=0.174 per day.

   b) Explain the effluent treatment plant required for treating waste from sugar industry.   **10**
List the byproducts obtained from manufacturing process of sugar.

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3. a) Discuss various methods of mixing adopted for equalization. Also Explain online and off-line equalization.   **10**

    b) Why EIA is done? Explain the same with following context for any infrastructure i)Screening ii) Scoping iii) Prediction iv) Reporting   **10**

4. a) List different types of aerobic and anaerobic treatment. Explain any two in detail.   **10**
    b) Discuss the characteristics of the waste water generated from a typical Dairy Industry. Draw the flow sheet for the treatment of effluent for the disposal on land and into Inland surface water.   **10**

5. a) Describe with the help of flow sheet how you will treat wastes from Metal processing industry.   **10**
    b) With the help of flow sheet, explain the manufacturing process of the paper by Kraft process. Draw the flow diagram of Massive lime treatment for colour removal in Paper industry.   **10**

6. a) Enumerate the various methods that can be used to dispose of the digested sludge. Select and describe the best method mainly adopted in new plants.   **10**

    b) Differentiate between STP and CETP. Explain with flow diagram CETP with its merits and demerits.   **10**

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Time: 3-hour   **Marks: 80**

N.B. : (1) Question No 1 is Compulsory.

      (2) Attempt any three questions out of the remaining five.

      (3) All questions carry equal marks.

      (4) Assume suitable data, if required and state it clearly.

      (5) Notations carry usual meaning.

Q1. Answer the following **(Any FOUR.)**   [20M]

    a) What are the contents of project charter? who prepares and authorizes the project charter?

    b) Compare the top-down budgeting and bottom-up budgeting.

    c) What is Goldratt's critical chain method?

    d) Explain the significance of IRR method in project selection.

    e) Briefly describe the purchasing cycle.

    f) Explain the risk breakdown structure.

Q2.   (a) A consulting project has an actual cost of Rs. 35000, Scheduled cost Rs. 27000, and   [5M]

      completed work is Rs. 31000. Find the Scheduled and Cost Variance. Also find SPI and CPI**.**

  (b) What is a contract? Explain different types of contracts in brief.   [5M]

  (c) Consider a project having following cash flow stream. The cost of capital (r) for the firm is

      10% . Calculate NPV of project and decide whether to accept or reject the project.   [10M]

Year	0	1	2	3	4	5
CASH Flow in Rs.	10,00,000	2,00,000	2,00,000	3,00,000	3,00,000	3,50,000

Q3. (a) What is project life cycle? how does cost of change, risk and influence of stakeholders are

      affected with Project time during the life cycle of project?   [10M]

Q3. (b) Explain probability and impact matrix. What are the risk response strategies foe negative risks

      (threats) and positive risks(opportunities).   [10M]

Q4. (a) A small project is composed of 8 activities, whose time estimates are listed below.

Activity	Predecessor	t_o	t_m	t_p
A	-	3	6	9
B	-	5	7	8
C	A	6	9	12
D	A	6	12	15
E	B	9	12	18
F	B	12	18	24
G	C, D, E	6	9	12
H	C	3	6	9

i)   Draw the project network diagram. Find the critical path and expected project duration.

ii) If the due date is 30 days. What is the probability that the project will be completed

within the due date?

iii) Find the probability of completing project between 26 to 31 days.   [10M]

Q4.   (b) What are the non-numeric models of project selection? Expalin in brief.   [5M]

Q4.   (c) Explain importance of ethics in projects.   [5M]

Q5.   (a) How communication is planned and managed in project management ?   [10M]

Q5.   (b) What is life cycle of a project audit ? what are responsibilities of project auditor ?

What is essential for successful project audit?   [10M]

Q6.   (a) What are four stages of team development and growth? What are the barriers to team

effectiveness?   [10M]

Q6.   (b) List and briefly describe the ways project may be terminated. What are some non-technical

reasons for project termination?   [10M]

Duration: 3hrs   **[Max Marks: 80]**

N.B.:   **(1) Question No 1 is Compulsory.**
         (2) Attempt any three questions out of the remaining five.
         (3) Each full question carries 20 marks.

1		Answer any FOUR	
	a	Differentiate between defect, distress and deterioration of structures	(05 M)
	b	What are the essential parameters for the selection of a suitable material for repair?	(05 M)
	c	What are the factors affecting readings of a Rebound hammer?	(05 M)
	d	Write a short note on epoxy resins	(05 M)
	e	List out the methods of seismic retrofitting	(05 M)
2	a	Explain various techniques for crack measurement with the help of sketches	(10 M)
	b	Write the applications of following	
		(i) Passivator	(05 M)
		(ii) Bonding agent	(05 M)
3	a	What is cathodic protection of reinforcement? Explain the procedure	(10 M)
	b	Explain any one semi destructive test for strength estimation of concrete?	(05 M)
	c	Briefly explain slab jacking	(05M)
4	a	With the help of neat sketches, explain defects in welded joints	(10 M)
	b	Briefly explain shoring and its types	(05 M)
	c	Explain injection grouting	(05 M)
5	a	Illustrate the following methods used for rehabilitation of concrete structures	(10 M)
		(i) Plate bonding	
		(ii) RCC jacketing	
	b	What special care should be taken during repair of heritage structures?	(05 M)
	c	Explain polymer modified concrete and its applications	(05 M)
6		Write short notes on	
	a	Lamellar tearing	(05 M)
	b	Base Isolation	(05 M)
	c	Life cycle cost of structure	(05 M)
	d	Routing and sealing of cracks	(05 M)

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