

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: _____

Curriculum Scheme: Rev2019/2016/2012 (Keep the required)

Examination: BE Semester VIII (Keep the Required)

Course Code: ILO8028 and Course Name: DBM

Time: 2 hour

Max. Marks: 80

NOTE to the Question Paper Setter: (To be deleted before submitting the paper to Semester Coordinator)

1. The question paper will be of total **80 Marks and Two hours duration**. Out of which **40 marks will be of 20 MCQs** carrying two marks each covering all the modules of the syllabus. Remaining two questions carrying 20 marks each (Total **40 marks**) will be of **subjective/descriptive in nature** of 5 or 10 marks as per the requirement of the subject/course and covering all the modules of the syllabus.
2. Referring to setting up MCQs
 - a. You need to check the questions and their answers for their correctness. There should not be any ambiguity in the questions and the options. Only one option should be the Correct Answer.
 - b. Among **20 MCQs** (based on complete syllabus), 8 questions can be under the 'Simple' category, 6 questions can be under the 'Moderate' category, and the remaining 6 questions can be under the 'Difficult' category.
 - c. Please do not reveal answer on this Question Paper.
 - d. Use another template provided to enter the correct answers.
3. Referring to setting up subjective/descriptive questions
 - a. Internal options should be provided in the subjective questions i.e. in case of 5 marks question 3 or 6 questions to be asked, out of which students will solve any two or four respectively. In case of 10 marks questions, 2 or 3 questions to be asked out of which students will solve any one or two respectively.
 - b. The sub questions in Q2 and Q3 have to be set on multiple modules. The paper setter has to make sure that the maximum syllabus is covered while setting up the questions for Q2 and Q3.
 - c. Weightage of the questions has to be decided as per the requirement of the subject. 10 marks questions will only be asked on design orientated subjects or application orientated subjects.
 - d. Paper setters shall select any one option, while setting up the questions, suggested in the template for Q2 and Q3
4. Please save this file with file name as per the sample format given below:

File Name: "Date of Examination_Scheme_Program_Semester_Subject Code_QP Set Number"

For example:

QP set number 1 of Engineering Mathematics-I of First Year Semester I for Rev2019 scheme and scheduled on 7/01/2021 has to have the file name as

0701_R19_FE_I_FEC101_QP1

QP set number 1 of first core course of Mechanical Engineering Semester V for Rev2016 scheme and scheduled on 23/12/2020 has to have the file name as

2312_R16_Mech_V_MEC501_QP1

QP set number 3 of Department Level Optional Course of Computer Engineering Semester VI for Rev2012 scheme and scheduled on 3/01/2021 has to have the file name as

0301_R12_Comp_VI_CSDLO6021_QP3

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| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
| 1. | In Network Security CIA stands for: |
| Option A: | Confidentiality, Integrity and Availability |
| Option B: | Central Investigation Agency |
| Option C: | Confidentiality, Intelligence and Accountability |
| Option D: | Cryptographic Intelligent Algorithm |
| 2. | Which one of the following is not a higher –layer SSL protocol? |
| Option A: | Alert Protocol |
| Option B: | Handshake Protocol |
| Option C: | Alarm Protocol |
| Option D: | Change Cipher Spec Protocol |
| 3. | A packet filter firewall filters at _____ |
| Option A: | Physical layer |
| Option B: | Data link layer |
| Option C: | Network layer or Transport layer |
| Option D: | Application layer |
| 4. | Mission statement and vision is the part of which Strategic Process. |
| Option A: | Formulation of Strategy |
| Option B: | Implementation of Strategy |
| Option C: | Evaluation of Strategy |
| Option D: | Internal Analysis Strengths weakness |
| 5. | Which of the following is the first step in strategic planning? |
| Option A: | set objectives and goals |
| Option B: | develop the business portfolio |
| Option C: | define the company mission |
| Option D: | plan marketing strategies |
| 6. | To fulfill the need of customer , the ability to change the product is called as |
| Option A: | Accessibility |
| Option B: | Personalization |
| Option C: | Customization |
| Option D: | Dependability |
| 7. | Competitive driver of e-business is |
| Option A: | Reduced sales costs |
| Option B: | Reduced service costs |
| Option C: | Avoiding losing market share to business |
| Option D: | To obtain supplies more rapidly |
| 8. | The most realistic relationship between e-business and e-commerce is |
| Option A: | E-commerce is subset of e-business |
| Option B: | E-commerce is nothing but e-business |
| Option C: | E-business is subset of e-commerce |
| Option D: | No relationship exists between e-commerce and e-business |

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| 9. | Which of following parameter is not associated with e-commerce security environment? |
| Option A: | Confidentiality |
| Option B: | Availability |
| Option C: | Message Integrity |
| Option D: | Non repudiation |
| 10. | What is at the heart of any ERP system? |
| Option A: | Information |
| Option B: | Employees |
| Option C: | Customers |
| Option D: | Database |
| 11. | Web ERP is suitable for _____ |
| Option A: | Both small and big organizations |
| Option B: | Only big organizations |
| Option C: | Medium scale organizations |
| Option D: | Only small organizations |
| 12. | _____ maintains reports of warehouse supplies. |
| Option A: | ERP financial module |
| Option B: | ERP Inventory software module |
| Option C: | ERP Resource module |
| Option D: | ERP verification module |
| 13. | Which type deals with auction? |
| Option A: | B2B |
| Option B: | B2C |
| Option C: | C2B |
| Option D: | C2C |
| 14. | Amazon belongs to |
| Option A: | B2B |
| Option B: | C2B |
| Option C: | C2C |
| Option D: | B2C |
| 15. | What is the percentage of customers who visit a Web site and actually buy something called? |
| Option A: | Affiliate programs |
| Option B: | Click-through |
| Option C: | Spam |
| Option D: | Conversion rate |
| 16. | Data in _____ bytes size is called Big Data. |
| Option A: | Tera |
| Option B: | Giga |
| Option C: | Peta |
| Option D: | Meta |

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| 17. | The Android software is based on Java and runs in a? |
| Option A: | Dalvik virtual machine |
| Option B: | Quadrangle virtual machine |
| Option C: | Qualcomm virtual machine |
| Option D: | Snapdragon virtual machine |
| 18. | What is NOT a benefit of BYOD? |
| Option A: | Reduced costs. |
| Option B: | Viruses and security issues. |
| Option C: | Familiarity. |
| Option D: | Ownership. |
| 19. | What does VNC stand for: |
| Option A: | Various Network computers |
| Option B: | Virtual Network Computing |
| Option C: | Virtual Network Communication |
| Option D: | Various Network Communication |
| 20. | IPSec provides security at: |
| Option A: | Physical Layer |
| Option B: | Network Layer |
| Option C: | Transport Layer |
| Option D: | Session Layer |

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| Q2 (20 Marks Each) | |
| A | Solve any Two 5 marks each |
| i. | Difference between Physical economy and Digital economy |
| ii. | Explain Digital Signature |
| iii. | Types of E-Commerce |
| B | Solve any One 10 marks each |
| i. | Explain ERP |
| ii. | Explain Analysis of Company's Internal and External environment |

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| Q3. (20 Marks Each) | |
| A | Solve any Two 5 marks each |
| i. | Write short note on Market research and Advertisement |
| ii. | Write short note on Firewall |
| iii. | Explain process of Digital Transformation |
| B | Solve any One 10 marks each |
| i. | Explain IOT |
| ii. | Explain Business Plan Preparation |

University of Mumbai
Examination 2020 under cluster 08 (Lead College: PHCET)
Examinations Commencing from 23rd December 2020 to 6th January 2021

Program: **B.E. All Branches**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: ILOC 8026 and Course Name: Research Methodology

Time: 2 hours

Max. Marks: 80

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| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
| 1. | _____ are statements/assumptions made -about the likely outcomes of the problem- which may or may not be true. |
| Option A: | Hypotheses |
| Option B: | Analytical models |
| Option C: | Research questions |
| Option D: | Marketing research problems |
| 2. | Characteristic of research is _____. |
| Option A: | Empirical |
| Option B: | Hypothetical |
| Option C: | Theoretical |
| Option D: | Unethical |
| 3. | Attributes of objects, events or things which can be measured are called |
| Option A: | Qualitative measure |
| Option B: | Data |
| Option C: | Variables |
| Option D: | Invariables |
| 4. | Inductive logic proceeds from |
| Option A: | General to General |
| Option B: | Specific to General |
| Option C: | General to Specific |
| Option D: | Specific to Specific |
| 5. | This is not the purpose of review of researches done in related fields of study |
| Option A: | to know what knowledge already exists |
| Option B: | to know gaps in knowledge that exists |
| Option C: | to avoid the replication of knowledge that exists |
| Option D: | to list the studies in their own research work |
| 6. | A company wants to know what are the problems are faced by employees in the night shift duties. The company is intending to undertake |
| Option A: | Pure research |
| Option B: | Applied research |
| Option C: | Basic research |

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| Option D: | Causal research |
| 7. | The process not needed in experimental researches is |
| Option A: | Reference collection |
| Option B: | Controlling |
| Option C: | Observation |
| Option D: | Manipulation and replication |
| 8. | Fundamental Research is otherwise called |
| Option A: | Action Research |
| Option B: | Survey |
| Option C: | Pilot study |
| Option D: | Pure Research |
| 9. | Which of the following tasks is not a part of research design? |
| Option A: | Design the exploratory, descriptive, and/or causal phases of the research. |
| Option B: | Construct and pretest a study instrument. |
| Option C: | Formulate the sampling plan |
| Option D: | Develop hypotheses |
| 10. | Research design is a blue print, outline and |
| Option A: | Plan |
| Option B: | System |
| Option C: | Strategy |
| Option D: | Guide |
| 11. | Which technique is generally followed when the population is finite? |
| Option A: | Area sampling technique |
| Option B: | Purposive sampling technique |
| Option C: | Systematic sampling technique |
| Option D: | Random sampling technique |
| 12. | In an experiment, the group that does not receive the intervention is called |
| Option A: | The experimental group |
| Option B: | The participant group |
| Option C: | The control group |
| Option D: | The treatment group |
| 13. | Questionnaire is a |
| Option A: | Research method |
| Option B: | Measurement technique |
| Option C: | Tool for data collection |
| Option D: | Data analysis technique |
| 14. | A Type 1 error occurs in a situation where: |
| Option A: | The null hypothesis is accepted when it is in fact true |
| Option B: | The null hypothesis is rejected when it is in fact false |
| Option C: | The null hypothesis is rejected when it is in fact true |
| Option D: | The null hypothesis is accepted when it is in fact false |

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| 15. | Which of the following is not a data-collection method? |
| Option A: | Research questions |
| Option B: | Unstructured interviewing |
| Option C: | Postal survey questionnaires |
| Option D: | Participant observation |
| 16. | When a hypothesis is stated negatively it is called |
| Option A: | Relational Hypothesis |
| Option B: | Situational Hypothesis |
| Option C: | Null Hypothesis |
| Option D: | Casual Hypothesis |
| 17. | Which of the following statement is wrong regarding inductive generalizations? |
| Option A: | They are based on observed facts and realistic foundation |
| Option B: | is scientific in character and some of the important theorems of the physical and social sciences have been developed through this method |
| Option C: | It is helpful in finding out the material truth |
| Option D: | It is easy, cost effective and time saving method |
| 18. | Developing a researchable question would not involve |
| Option A: | Considering the time and resources available to you |
| Option B: | Bearing in mind your technical expertise in the area of research |
| Option C: | Deciding what statistical software to use |
| Option D: | Assessing the work involved |
| 19. | Research ethics do not include |
| Option A: | Integrity |
| Option B: | Honesty |
| Option C: | Subjectivity |
| Option D: | Objectivity |
| 20. | Failure to acknowledge the borrowed material is called |
| Option A: | Acknowledgement |
| Option B: | Index |
| Option C: | Bibliography |
| Option D: | Plagiarism |

| Q2. | Solve any Four out of Six | 5 marks each |
|------------|--|---------------------|
| A | What are the problems faced by Researcher | |
| B | Give the Characteristics of Research Explain in detail | |
| C | Explain Qualitative & Quantitative Research | |
| D | What is a Research Design? Explain its Necessity | |
| E | What are the Characteristics of good hypothesis ? Explain type I & type II errors | |
| F | What are the differences between observation and interviewing as methods of data collection? | |

| Q3. | Solve any Four out of Six | 5 marks each |
|------------|--|---------------------|
| A | Define Hypothesis with example | |
| B | Explain Ex post facto Research with example | |
| C | What do you mean by Sampling ? What are the types of Sampling | |
| D | Enumerate the different methods of collecting data giving one example each | |
| E | State the sources of research problem. How a problem is identified? Enumerate the criteria for the selection of a problem | |
| F | “Ethics in research is the need of the hour” Justify the statement | |

University of Mumbai

Examination 2020 under cluster __ (Lead College: APSIT)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: ALL

Curriculum Scheme: Rev2016

Examination: FE/SE/TE/BE Semester VIII

Course Code: ILO8024 and Course Name: HUMAN RESOURCE MANAGEMENT

Time: 2 hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks. 2 marks each (40 Marks) |
|------------|--|
| 1. | Human resource management excludes |
| Option A: | Motivation |
| Option B: | Selling |
| Option C: | Rewards and compensation |
| Option D: | Recruitment |
| 2. | Human resource Planning is choosing the |
| Option A: | Right product |
| Option B: | Right person |
| Option C: | Right producers |
| Option D: | Right human behaviour |
| 3. | Maslow's theory of human needs include... |
| Option A: | Responsibility |
| Option B: | Self-actualization |
| Option C: | Self-management |
| Option D: | Empowerment |
| 4. | _____ represent basic convictions that "a specific mode of conduct or end state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence." |
| Option A: | Values |
| Option B: | Attitude |
| Option C: | Motivation |
| Option D: | Ethics |
| 5. | _____ is a process by which we organize and interpret sensory impressions in order to give meaning to our environment |
| Option A: | Decision making |
| Option B: | Negotiation |
| Option C: | Perception |
| Option D: | Conflict negotiation |
| 6. | Which one of the below mentioned functions is the part of the organizational level? |
| Option A: | Organisational Culture |
| Option B: | Group Structure |
| Option C: | Team |

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| Option D: | Group Norms |
| 7. | A leader should be able to _____ |
| Option A: | Take selfish decisions |
| Option B: | Explain organisational goals |
| Option C: | Sack the employees |
| Option D: | Fire the employees |
| 8. | Group rules are for _____ of the members. |
| Option A: | Harassment |
| Option B: | Behaviour |
| Option C: | Punishment |
| Option D: | Sacking |
| 9. | What is the first step in the appraisal process? |
| Option A: | Giving feedback |
| Option B: | Defining the job |
| Option C: | Administering the appraisal tool |
| Option D: | Making plans to provide training |
| 10. | Power that is based on fear called as |
| Option A: | Reward Power |
| Option B: | Information Power |
| Option C: | Coercive Power |
| Option D: | Legitimate Power |
| 11. | Human Resource Planning is done based on |
| Option A: | Market Condition |
| Option B: | Financial Condition |
| Option C: | Organisational Plan |
| Option D: | External Environment |
| 12. | Which is the least expensive method for recruitments? |
| Option A: | Walk - ins, write - ins and talk - ins |
| Option B: | Campus placements |
| Option C: | Employment exchanges |
| Option D: | Consultants |
| 13. | Development is not related to |
| Option A: | Technical aspects |
| Option B: | Conceptual |
| Option C: | Human skills |
| Option D: | Termination |
| 14. | Which one from the following options is challenge in diversity at workplace? |
| Option A: | Increase in Productivity |
| Option B: | High Performance team building |
| Option C: | Conflicts |
| Option D: | Increase in Pay |

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| 15. | Which of this is a step in training process |
| Option A: | Use of evaluation models |
| Option B: | Obstacles in the system |
| Option C: | KSA deficiency |
| Option D: | Provide proper feedback |
| 16. | Which among the following will not be included in Business Process Reengineering? |
| Option A: | To set the vision & business goals |
| Option B: | To dissuade employees from using technology |
| Option C: | Establish a competent team |
| Option D: | Redesign the process |
| 17. | Which one is generation Z? |
| Option A: | Born Between 2001-2020 |
| Option B: | Born Between 1965-1981 |
| Option C: | Born Between 1941-1964 |
| Option D: | Born Between 1982-2000 |
| 18. | Which conflict occurs within an individual? |
| Option A: | Interpersonal |
| Option B: | Intra-personal |
| Option C: | Intra-Group |
| Option D: | Inter Group |
| 19. | As per the factories Act "CHILD" means a person who has not completed ----- years of age |
| Option A: | 15 |
| Option B: | 16 |
| Option C: | 17 |
| Option D: | 18 |
| 20. | Shops and Establishment Act applies to all----- |
| Option A: | Cultivate Shops , Restaurants, Hotels, Theatres, Amusement parks etc. |
| Option B: | Only Shops |
| Option C: | Only Hotels |
| Option D: | Only Theatres |

Q. 2 Solve any Two Questions out of Three

10 marks each (20 Marks)

- A) Explain the appraisal process and the methods of appraisal (10)
- B) Explain the recruitment process and the external sources of recruitment in detail. (10)
- C) Explain evolution and functions of HRM (10)

Q. 3 Solve any Two out of Three

10 marks each (20 Marks)

- A) Explain organizational behavior and its determinants. (10)
- B) Define the term 'training and development'. Explain the importance and various inputs required for a training and development program. (10)

C)

i) Write short note on TQM. (5)

ii) Define Ethics and explain characteristics of ethics (5)

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **ALL**

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: ILO8027 and Course Name: IPR and Patenting

Time: 2-hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|-----------|--|
| 1. | A _____ is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. |
| Option A: | Logo |
| Option B: | Geographical Indication (GI) |
| Option C: | Trademark |
| Option D: | Patents & Copyrights |
| 2. | A company wishes to ensure that no one else can use their logo should file rights for a |
| Option A: | Patents |
| Option B: | Copyrights |
| Option C: | Trade mark |
| Option D: | Industrial design |
| 3. | A vocalist who wishes to assign the rights to reproduce a video he has made of his concert should go for filing a |
| Option A: | Patents |
| Option B: | Copyrights |
| Option C: | Trade mark |
| Option D: | Industrial design |
| 4. | A _____ extinguishes all rights of the IP holder. |
| Option A: | Grant |
| Option B: | Sale |
| Option C: | Deal |
| Option D: | Infringement |
| 5. | The industrial design is protected for _____ years |
| Option A: | 15 |
| Option B: | 10 |
| Option C: | 5 |
| Option D: | 20 |

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| 6. | Patent right is not _____ |
| Option A: | Limited period right |
| Option B: | Territorial right |
| Option C: | Absolute right |
| Option D: | Natural right |
| | |
| 7. | PCT stands for _____ |
| Option A: | Patent Certification Treaty |
| Option B: | Patent Cooperation Trade |
| Option C: | Patent Cooperation Treaty |
| Option D: | Patent Copyright Treaty |
| | |
| 8. | E-commerce thing that needs to be considered with respect to IP is _____ |
| Option A: | traditional knowledge |
| Option B: | Media |
| Option C: | Logo |
| Option D: | Photos |
| | |
| 9. | TKRC is _____ |
| Option A: | Traditional Knowledge Resource Classification |
| Option B: | Total Knowledge Resource Classification |
| Option C: | Traditional Knowledge Resource Contents |
| Option D: | True Knowledge Resource Contents |
| | |
| 10. | What is included in biological resources? |
| Option A: | Animals |
| Option B: | human genetic material |
| Option C: | softwares with Genetic algorithms |
| Option D: | Designs |
| | |
| 11. | What protects the intellectual property created by inventors? |
| Option A: | Copyright |
| Option B: | geographical indications |
| Option C: | Patents |
| Option D: | registered designs |
| | |
| 12. | Is a patent granted in India valid in any other country? |
| Option A: | Yes |
| Option B: | only in signatory countries to TRIPS |
| Option C: | No |
| Option D: | only to neighboring countries |
| | |
| 13. | Which of the following is not patentable according to Indian Patent Act 1970? |

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| Option A: | Pin |
| Option B: | Chair |
| Option C: | washing machine |
| Option D: | a new method of horticulture |
| | |
| 14. | Where is the Japan Patent Office located? |
| Option A: | Tokyo |
| Option B: | Kyoto |
| Option C: | Osaka |
| Option D: | Nara |
| | |
| 15. | _____ means a person who in law represents the estate of a deceased person; |
| Option A: | Person |
| Option B: | Patentee |
| Option C: | legal representative |
| Option D: | person interested |
| | |
| 16. | _____ means an application for patent made in accordance with the Patent Cooperation Treaty. |
| Option A: | patent of addition |
| Option B: | Patent |
| Option C: | international application |
| Option D: | new invention |
| | |
| 17. | _____ means trespass on an intellectual property. |
| Option A: | Enforcement |
| Option B: | Licensing |
| Option C: | Infringement |
| Option D: | Assignment |
| | |
| 18. | IPC in patenting means |
| Option A: | Indian Patent Classification |
| Option B: | International Panel Code |
| Option C: | International Patent Classification |
| Option D: | International Postal Code |
| | |
| 19. | In compulsory license, the right of the licensee is _____ |
| Option A: | Exclusive license |
| Option B: | Non-exclusive |
| Option C: | Assignable |
| Option D: | non-assignable |
| | |
| 20. | The Indian Patent Act was established in |
| Option A: | 1790 |

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| Option B: | 1947 |
| Option C: | 1970 |
| Option D: | 2020 |

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| Q2. | Solve any Four out of Six | 5 marks each |
| A | Describe different types of Intellectual Property. | |
| B | What are the impacts of IP Rights? | |
| C | Enumerate the procedure to register the copyright. | |
| D | Explain Paris Convention Treaty. | |
| E | What are challenges to Intellectual Property in Traditional Knowledge? | |
| F | Explain in brief about Intellectual Property and Digital Economy. | |

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| Q3. | Solve any Four out of Six | 5 marks each |
| A | Explain the contents of complete specification for patent application. | |
| B | Discuss the major steps involved to register a patent. | |
| C | Write a short note on rights and liabilities of patentees. | |
| D | Write a short note on US Scenario of Patent Rules | |
| E | List and explain types of claims. | |
| F | Describe non-patentable inventions with example. | |

Program: BE (ALL BRANCHES)

Curriculum Scheme: Rev2020

Examination: BESemesterVIII

Course Code:ILOC8021and Course Name: Project Management

Time: 2 hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|------------|---|
| 1. | Which of the following is the most important element of Project Management Plan that is useful in Planning process: |
| Option A: | Risk Management activities |
| Option B: | Quality Assurance activities |
| Option C: | Activity Resource requirements |
| Option D: | Budget Control activities |
| 2. | CPM is an acronym for |
| Option A: | Control Path Method |
| Option B: | Critical Path Method |
| Option C: | Cohesion Path Method |
| Option D: | Control Path Model |
| 3. | A Project with a total funding of \$100,000 finished with a BAC value of \$95,000. What term can BEST describe the difference of \$5,000? |
| Option A: | Cost Variance |
| Option B: | Management Overhead |
| Option C: | Management Contingency Reserve |
| Option D: | Schedule Variance |
| 4. | Activity Definition is typically performed by which of the following: |
| Option A: | Project Manager who created the WBS |
| Option B: | Project Team Members responsible for the work package |
| Option C: | Project Officer |
| Option D: | Project Stakeholder |
| 5. | Expected risks in a project is represented in a tabular form by |
| Option A: | Risk Table |
| Option B: | Assessment Table |
| Option C: | Time Table |
| Option D: | Round Table |
| 6. | A project has a 60% chance of a \$100,000 profit and a 40 percent of a \$100,000 loss. The Expected Monetary Value for the project is: |
| Option A: | \$100,000 profit |
| Option B: | \$60,000 loss |
| Option C: | \$ 20,000 profit |
| Option D: | \$40,000 loss |

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| 7. | The time taken to break even or pay back the initial investment is called as |
| Option A: | Back period. |
| Option B: | Payback period. |
| Option C: | Cash back period. |
| Option D: | Rate of Return. |
| 8. | The expenditure and income taken place in a project is indicated by |
| Option A: | Cash flow forecast. |
| Option B: | Cost analysis. |
| Option C: | Fund flow. |
| Option D: | Technical forecast. |
| 9. | The method which is carried out to calculate the earliest dates on which each activity may be started and completed is |
| Option A: | Backward pass |
| Option B: | Forward pass |
| Option C: | No pass. |
| Option D: | Increasing pass. |
| 10. | The shortest time in which we could expect to complete the activity, barring outright miracles is called as |
| Option A: | Optimistic Time |
| Option B: | Pessimistic Time |
| Option C: | Most Likely Time |
| Option D: | Shortest Time |
| 11. | Which of these is not one of the constraints of a project? |
| Option A: | Scope |
| Option B: | Team |
| Option C: | Resources |
| Option D: | Budget |
| 12. | Which is not one of the stages of Project Management Lifecycle? |
| Option A: | Definition and Conceptualization |
| Option B: | Management and Measurement |
| Option C: | Planning and Budgeting |
| Option D: | Execution and Control |
| 13. | Activities A, B, and C are the immediate predecessors for Y activity. If the earliest finish times for the three activities are 12, 15, and 10, then the earliest start time for Y will be |
| Option A: | 10 |
| Option B: | 15 |
| Option C: | 12 |
| Option D: | 100 |
| 14. | The critical path is referred to as the |
| Option A: | Most direct path from the beginning node to the ending node |

| | |
|-----------|---|
| Option B: | Shortest path in terms of time |
| Option C: | Longest path in terms of time |
| Option D: | Path with the largest amount of slack time |
| | |
| 15. | A schedule activity may begin 10 days before the predecessor activity finishes. This is an example of: |
| Option A: | Finish-to-Start |
| Option B: | Start-to-Finish |
| Option C: | Start-to-Start |
| Option D: | Finish-to-Finish |
| | |
| 16. | Resource requirement in project becomes constant while the project is in its what progress stage |
| Option A: | 40 to 55% |
| Option B: | 55 to 70% |
| Option C: | 70 to 80% |
| Option D: | 80 to 95% |
| | |
| 17. | What limits the options of the project team? |
| Option A: | Constraints |
| Option B: | Assumptions |
| Option C: | Technology |
| Option D: | Deliverables |
| | |
| 18. | The difference between the cumulative earned value of the work performed and the cumulative actual cost is known as |
| Option A: | Cost performance index |
| Option B: | Cost variance |
| Option C: | Budgeted costs |
| Option D: | Cost quality index |
| | |
| 19. | Which of the following does NOT generate changes to the Project documents: |
| Option A: | Define Activities |
| Option B: | Sequence Activities |
| Option C: | Estimate Activity Resources |
| Option D: | Estimate Activity Durations |
| | |
| 20. | If the Earned Value is equal to Actual Cost, it means |
| Option A: | Project is on budget and on schedule |
| Option B: | Schedule variance index is 1 |
| Option C: | There is no schedule variance |
| Option D: | There is no cost variance |

| | | |
|-----------|---|----------------------|
| Q2 | Solve any Two Questions out of three. | 5 marks each |
| A | I. Compare AOA and AON | |
| | II. Compare internal risk and external risk. | |
| | III. State the limitations of Gantt chart | |
| B | Solve any One | 10 marks each |
| | I. What is Work breakdown structure. Draw and explain the WBS for hospital management system. | |
| | II. What is project crashing. Explain with the help of suitable example. | |

| | | |
|-----------|---|----------------------|
| Q3 | Solve any Two Questions out of Three | 5 marks each |
| A | I. List and explain the phases of project life | |
| | II. Why leveling of resources is preferred to large fluctuations, justify ? | |
| | III. List the steps involved in terminating a project. | |
| B | Solve any One | 10 marks each |
| | I. Explain the terms qualitative risk and quantitative risk. List and explain the risk response strategies. | |
| | II. What are the knowledge areas and process groups in Project Management as per PMI? | |

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **All**

Curriculum Scheme: Rev2016

Examination: BE

Semester VIII

Course Code: ILO8022

Course Name: Finance management

Time: 2 hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|-----------|--|
| 1. | _____ are a long-term promissory notes with maturities ranging from 5 to 30 years. |
| Option A: | Notes |
| Option B: | Shares |
| Option C: | Bonds |
| Option D: | Commercial Papers |
| 2. | Which of the following is not the Financial Services in Indian Financial System? |
| Option A: | Local Bankers |
| Option B: | Investment Banking |
| Option C: | Credit Rating |
| Option D: | Asset Management |
| 3. | The regulator for Primary and secondary market is |
| Option A: | IRDA |
| Option B: | SEBI |
| Option C: | RBI |
| Option D: | CRISIL |
| 4. | With a well-diversified portfolio, an investor can reduce |
| Option A: | Unsystematic risk |
| Option B: | systematic risk |
| Option C: | Market Risk |
| Option D: | finance risk |
| 5. | A statistical measure of the degree to which two variables (e.g., securities' returns) move together. |
| Option A: | Certainty equivalent |
| Option B: | Covariance |
| Option C: | Variance |
| Option D: | Coefficient of variation |
| 6. | How you can turn a portfolio having two risky securities into risk less if |
| Option A: | The securities are completely negatively correlated |
| Option B: | The securities are completely positively correlated |
| Option C: | If the correlation ranges between zero and one |

| | |
|-----------|---|
| Option D: | If the correlation ranges between zero and two |
| | |
| 7. | When the concept of ratio is defined in respected to the items shown in the financial statements, it is termed as |
| Option A: | Accounting ratio |
| Option B: | Financial ratio |
| Option C: | Costing ratio |
| Option D: | leverage Ratio |
| | |
| 8. | When the concept of ratio is defined in respected to the items shown in the financial statements, it is termed as |
| Option A: | Accounting ratio |
| Option B: | Financial ratio |
| Option C: | Costing ratio |
| Option D: | leverage Ratio |
| | |
| 9. | What is the value of the firm usually based on |
| Option A: | The value of debt and equity. |
| Option B: | The value of equity. |
| Option C: | The value of debt. |
| Option D: | The value of assets plus liabilities. |
| | |
| 10. | The assets that can be converted into cash within a short period (i.e.1 year or less) are known as |
| Option A: | Current assets |
| Option B: | Fixed assets |
| Option C: | Intangible assets |
| Option D: | Investments |
| | |
| 11. | The assets that can be converted into cash within a short period (i.e.1 year or less) are known as |
| Option A: | Current assets |
| Option B: | Fixed assets |
| Option C: | Intangible assets |
| Option D: | Investments |
| | |
| 12. | The use of NPV rule in investment decisions require information about – |
| Option A: | Profit |
| Option B: | Risk |
| Option C: | Time value of money |
| Option D: | Cash flows |
| | |
| 13. | Which among the following is not a current liability? |
| Option A: | Equity Shares |
| Option B: | Interest payable |
| Option C: | Accrued Expenses |
| Option D: | Accounts Payable |
| | |
| 14. | The XYZ purchases a new equipment. The selected data is given below: Cost of equipment: Rs 25,000, Useful life of equipment: 5 years, Tax rate: 30%. If |

| | |
|-----------|--|
| | equipment is depreciated using straight line method, what is the depreciation tax benefit associated with the new equipment? |
| Option A: | Rs 35000 |
| Option B: | Rs 1500 |
| Option C: | Rs 7500 |
| Option D: | Rs 5000 |
| | |
| 15. | Gross Working Capital is the capital invested in |
| Option A: | Total Assets |
| Option B: | Total Assets minus Total Liabilities |
| Option C: | Total Current Assets |
| Option D: | Current Assets minus Current Liabilities |
| | |
| 16. | In _____ approach, the capital structure decision is relevant to the valuation of the firm. |
| Option A: | Net income |
| Option B: | Net operating income |
| Option C: | Traditional |
| Option D: | Miller and Modigliani |
| | |
| 17. | Under the lease agreement, the lessee gets the right to |
| Option A: | Share profits earned by the lessor |
| Option B: | Participate in the management of the organization |
| Option C: | Use the asset for a specified period |
| Option D: | Sell the assets |
| | |
| 18. | What assumptions have to consider to approach the Net operating income to valuation? |
| Option A: | that debt and equity levels remain unchanged. |
| Option B: | that interest expense and taxes are included in the calculation |
| Option C: | that dividends increase at a constant rate. |
| Option D: | that ko remains constant regardless of changes in leverage. |
| | |
| 19. | If a firm has low fixed costs relative to all other firms in the same industry, a large change in sales volume (either up or down) would have: |
| Option A: | a smaller change in EBIT for the firm versus the other firms. |
| Option B: | no effect in any way on the firms as volume does not effect fixed costs. |
| Option C: | a decreasing effect on the cyclical nature of the business. |
| Option D: | a larger change in EBIT for the firm versus the other firms. |
| | |
| 20. | Which of the following are theories for dividend relevance? |
| Option A: | Walter's Model |
| Option B: | MM Approach |
| Option C: | Game theory |
| Option D: | Market Value theory |

| | | |
|-----------|--|---------------------|
| Q2 | Solve any Four out of Six | 5 marks each |
| A | What functions are performed by the Reserve Bank of India? | |
| B | A 12 - payment annuity of Rs.20,000 will begin 8 years hence. (The first payment | |

| | |
|---|--|
| | occurs at the end of 8 years). What is the present value of this annuity if the discount rate is 14 percent? |
| C | What are the Sources of Short Term Financing? |
| D | Examine critically "Debentures" as a source of Corporate Finance |
| E | How to calculate discounted payback period for a project? (assume suitable data) |
| F | Discuss traditional approach of capital structure design |

| | | |
|-----------|---|---------------------|
| Q3 | Solve any Four out of Six | 5 marks each |
| A | State and illustrate different financial instruments | |
| B | What are the risk associated with business and how are they measured? | |
| C | What is the importance of Financial Ratio Analysis? | |
| D | Discuss factor affecting working capital needs of an entity | |
| E | Discuss Modigliani-Miller (MM) approach for capital structure | |
| F | Explain the Factors determining Dividend Policy. | |

University of Mumbai

Examination 2020 under cluster 8 (Lead College: PHCET)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: All Branch

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: ILO8023 and Course Name: Entrepreneurship Development and Management
Time: 2 hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|-----------|---|
| 1. | MUDRA stands for _____ . |
| Option A: | Metropolitan and Urban Development Regulatory Authority |
| Option B: | A scheme under Ministry of AYUSH |
| Option C: | Micro Units Development and Refinance Agency |
| Option D: | Macro Units Development and Refinance Agency |
| 2. | What is Mahila Vikas Nidhi? |
| Option A: | It offers developmental assistance for pursuit of income generating activities to women |
| Option B: | housing scheme for women |
| Option C: | subsidized gas cylinder |
| Option D: | Subsidy scheme for women |
| 3. | Enterprise is classified as medium if |
| Option A: | Annual turnover not more than 15cr |
| Option B: | Annual turnover not more than 250cr |
| Option C: | Annual turnover not more than 25cr |
| Option D: | Annual turnover not more than 50cr |
| 4. | What is CVY? |
| Option A: | Coir Vikas Yojana |
| Option B: | Cottage Vikas Yojana |
| Option C: | Cotton Vikas Yojana |
| Option D: | Communication Vikas Yojana |
| 5. | What is purpose of National Manufacturing Competitiveness Programme |
| Option A: | to support the SMEs to get loan |
| Option B: | to support the SMEs to get market |
| Option C: | to support the SMEs to get land |
| Option D: | to support the SMEs in their endeavor to become competitive |
| 6. | IPR stands for _____ |
| Option A: | Intellectual Property Rights |
| Option B: | Individual Property Rights |
| Option C: | Indian Property Rights |

| | |
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| Option D: | Institutional property rights |
| 7. | One of the disadvantages of a franchise business for a franchisee is, |
| Option A: | Lack of market availability |
| Option B: | Lack of independence. |
| Option C: | Lack of training |
| Option D: | Lack of brand identity. |
| 8. | In PESTEL analysis, 'P' stands for: |
| Option A: | political |
| Option B: | population |
| Option C: | people |
| Option D: | profit |
| 9. | Question Marks in BCG matrix represents, |
| Option A: | High Growth, Low Market Share |
| Option B: | Low Growth, Low Market Share |
| Option C: | Low Growth, High Market Share |
| Option D: | High Growth, High Market Share |
| 10. | A good Business plan _____ . |
| Option A: | Predict the future. |
| Option B: | Predict the demand. |
| Option C: | Can attract the investors. |
| Option D: | Guarantee profit. |
| 11. | When the companies mutually agreed to become partners in fairly & friendly way to run the business, then it is called as, |
| Option A: | collaboration |
| Option B: | franchise |
| Option C: | acquisition |
| Option D: | merger |
| 12. | Document that can convince the reader that the business can produce enough revenue to make a satisfactory profit and therefore attractive as an investment opportunity is called as, |
| Option A: | Future plan |
| Option B: | Profit-loss statement |
| Option C: | Balance statement |
| Option D: | Business plan |
| 13. | Which of the following is NOT the example of PPP project? |
| Option A: | Mumbai Metro |
| Option B: | Sister Nivedita Bridge in Kolkata |
| Option C: | Underground car parking system in Kolkata |
| Option D: | Ola Travelling system |
| 14. | Which of the following questions are NOT answered by a business plan? |
| Option A: | Where am I now? |
| Option B: | Where am I going? |
| Option C: | How will I get there? |

| | |
|-----------|---|
| Option D: | Why should I do this business? |
| 15. | Who is appointed as a chairperson of the Mission Directorate (Executive Committee) level of National Skill Development Mission. |
| Option A: | Secretary, MSDE |
| Option B: | Minister, MSDE |
| Option C: | Secretary, Shiksha Mantralaya |
| Option D: | Minister, Shiksha Mantralaya |
| 16. | Which one of the following is NOT the category of clients in MUDRA Bank? |
| Option A: | Shishu |
| Option B: | Kishor |
| Option C: | Tarun |
| Option D: | Vruddha |
| 17. | What is the process of one company taking over by the other called? |
| Option A: | Merger |
| Option B: | Acquisition |
| Option C: | Going public |
| Option D: | Write off |
| 18. | What is Vertical Merger? |
| Option A: | takes a company a step closer towards monopoly by eliminating a competitor |
| Option B: | combination of two entities at different stages of the industrial or production process |
| Option C: | the shareholders of one entity receives cash instead of shares in the merged entity |
| Option D: | merger between two entities in unrelated industries |
| 19. | _____ refers to the successful selling of a product or service in a specific market. |
| Option A: | Market penetration |
| Option B: | Advertisement |
| Option C: | outreach |
| Option D: | consolidation |
| 20. | What is NOT an IPO |
| Option A: | An initial public offering (IPO) refers to the process of offering shares of a private corporation to the public in a new stock issuance. |
| Option B: | Initial public offering or stock market launch is a type of public offering in which shares of a company are sold to institutional investors and usually also retail investors. |
| Option C: | An initial public offering (IPO) refers to the process of offering shares of a private corporation to the public in a new stock issuance. |
| Option D: | IPO is transferring company to charitable trust |

| Q2 | Solve any Four out of Six. | 5 marks each |
|-----------|---|---------------------|
| A | Discuss challenges faced by MSMEs. | |
| B | Explain the various forms of business ownership. | |
| C | Explain new product development process. | |
| D | Explain MSME with respect to following points: 1) The industries that come under MSME, 2) Definitions of micro, small and medium enterprises In accordance with the provision of Micro, Small & Medium Enterprises Development (MSMED) Act, 2006, 3) benefits of MSME registration. | |
| E | Explain PMEGP with respect to the following points: 1) It's objectives, 2) Eligibility criteria for PMEGP, 3) It's features | |
| F | Explain the small business life cycle in detail. | |

| Q3. | Solve any Four out of Six. | 5 marks each |
|------------|---|---------------------|
| A | Discuss various funding schemes for women entrepreneurs | |
| B | Explain marketing schemes for MSMEs | |
| C | What do you mean by MSME? | |
| D | Explain the importance of business plan for new business. | |
| E | What are the various sources of a finance for new business & explain the importance of capital to entrepreneurship. | |
| F | Explain supply chain management. | |

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021
to 20th January 2021

Program: ALL

Curriculum Scheme: Rev2016

Examination: BE Semester: VIII

Course Code: ILO8029 and Course Name: Environmental management

Time: 2 hour

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|-----------|---|
| 1. | Abiotic environment does not include |
| Option A: | Soil |
| Option B: | Water |
| Option C: | Air |
| Option D: | Plant |
| 2. | A relatively dense layer of band which is found in the thermosphere is known as? |
| Option A: | Troposphere |
| Option B: | Mesosphere |
| Option C: | Stratosphere |
| Option D: | Ionosphere |
| 3. | The word environment is derived from French word |
| Option A: | Environner |
| Option B: | Environnering |
| Option C: | E-Environner |
| Option D: | Envo |
| 4. | Sunder LalBahuguna is famous for |
| Option A: | Narmada BachaoAndolan |
| Option B: | TehriBachoAndolan |
| Option C: | Ganga BachoAndolan |
| Option D: | Jungle BachoAndolan |
| 5. | Which of the following conceptual components of the environment are effective transporters of matter? |
| Option A: | Hydrosphere and lithosphere |
| Option B: | Atmosphere and lithosphere |
| Option C: | Atmosphere and hydrosphere |
| Option D: | Lithosphere and biosphere |
| 6. | Acid rain can be prevented by |

| | |
|-----------|--|
| Option A: | Increasing the emission of SO ₂ and NO ₂ |
| Option B: | Decreasing the emission of SO ₂ and NO ₂ |
| Option C: | Increasing the emission of HCL and Phosphate |
| Option D: | Decreasing the emission of HCL and Phosphate |
| | |
| 7. | To maintain ecological balance and regulate the population size of different animals, this is useful |
| Option A: | Sun chain |
| Option B: | Wind chain |
| Option C: | Food chain |
| Option D: | Grass chain |
| | |
| 8. | The tropical grasslands in Africa with tall grasses scattered with shrubs or stunted trees are called |
| Option A: | Savanas |
| Option B: | Pampas |
| Option C: | Steppes |
| Option D: | Prairies |
| | |
| 9. | Among the ecosystem mentioned below , where one can find maximum biodiversity |
| Option A: | Mangroves |
| Option B: | Desert |
| Option C: | Coral Reefs |
| Option D: | Alpine meadows |
| | |
| 10. | Which of the following helped in the saving of trees? |
| Option A: | Pouring of water |
| Option B: | Developing of chemical manuals |
| Option C: | Use of modern agriculture |
| Option D: | Development of iron and steel |
| | |
| 11. | Which of the following model satisfies four conditions - Consistently satisfactory, Sustainable economic performance, Ethical actions and Behaviour. |
| Option A: | Spiral Model |
| Option B: | Corporate Citizenship Model |
| Option C: | Corporate Civil Model |
| Option D: | Spiral Model |
| | |
| 12. | Supplying socially harmless products, Adopt fair pricing and Provide good service after sales are responsibilities towards - |
| Option A: | Consumer |
| Option B: | Seller |
| Option C: | Dealer |
| Option D: | Manufacturer |
| | |
| 13. | Which is not a decided component amongst the following to maintain public |

| | |
|-----------|--|
| | health and safety to ensure quality of total environment ? |
| Option A: | Water |
| Option B: | Air |
| Option C: | Junk food |
| Option D: | Radiation |
| | |
| 14. | CER stands for - |
| Option A: | Corporate Environmental Responsibility |
| Option B: | Complete Environmental Responsibility |
| Option C: | Corporate Energy Responsibility |
| Option D: | Corporate Environmental Response |
| | |
| 15. | The term 'Municipal Solid Waste' is used to describe which kind of solid waste? |
| Option A: | Non toxic |
| Option B: | Toxic |
| Option C: | Non hazardous |
| Option D: | Hazardous |
| | |
| 16. | ISO – 14001 gives stress on |
| Option A: | Plan – Do -check -Act |
| Option B: | Environmental protection |
| Option C: | Prevention rather than detection |
| Option D: | Proceed-Do-correct-Act |
| | |
| 17. | What is not covered in the ISO-14000 ? |
| Option A: | Adoption of environmental safety guideline |
| Option B: | Energy audit in Industry |
| Option C: | Adoption of clean environment |
| Option D: | Adoption of environmental management system in industry or organization |
| | |
| 18. | Name the Ministry which deals with environment related issues |
| Option A: | Ministry of Water Resources |
| Option B: | Ministry of Forest |
| Option C: | Ministry of Environment , Forests and Climate change (MoEFCC) |
| Option D: | Ministry of Agriculture |
| | |
| 19. | Under _____ Act, Rules relative to various aspects of management of hazardous chemicals, wastes. have been notified. |
| Option A: | Water Act (1974) |
| Option B: | Air Act (1981) |
| Option C: | Environment Protection Act (1986) |
| Option D: | Biodiversity Act (2002) |
| | |

| | |
|-----------|---|
| 20. | _____ of the Constitution of India directs the State to protect and improve the environment and safeguard wildlife and forests. |
| Option A: | Article 51A |
| Option B: | Article 58A |
| Option C: | Article 1A |
| Option D: | Article 48A |

| | |
|------------|---|
| Q2 | Solve any Four out of Six (Total 20Marks) |
| A | What are different environmental issues relevant to India |
| B | State the various carrier opportunities in Environmental Management |
| C | Describe any TWO types of Ecosystems |
| D | What is relationship between Food chain and Food Web |
| E | What is an EMS certification all about. |
| F | Give a brief account of Air (P and CP Act) |
| | |
| Q3. | Solve any Two Questions out of Three (Total 20 Marks) |
| A | Explain what is meant by hazardous waste and how it can be dealt with. |
| B | Explain the role of environment management and total quality management to achieve total quality environmental management |
| C | Explain some of the common sources of water pollutants and their effects on humans, plants and animals. |

University of Mumbai

Examination 2020 under cluster __ (Lead College: _____)

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: Institute Level Elective

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: ILO8025 and Course Name: PE and CSR

Time: 2 hour

Max. Marks: 80

1. Please save this file with file name as per the sample format given below:

File Name: "Date of Examination_Scheme_Program_Semester_Subject Code_QP Set Number"

For example:

QP set number 1 of Engineering Mathematics-I of First Year Semester I for Rev2019 scheme and scheduled on 7/01/2021 has to have the file name as

0701_R19_FE_I_FEC101_QP1

QP set number 1 of first core course of Mechanical Engineering Semester V for Rev2016 scheme and scheduled on 23/12/2020 has to have the file name as

2312_R16_Mech_V_MEC501_QP1

QP set number 3 of Department Level Optional Course of Computer Engineering Semester VI for Rev2012 scheme and scheduled on 3/01/2021 has to have the file name as

0301_R12_Comp_VI_CSDLO6021_QP3

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|-----------|---|
| 1. | The inclusive term used to refer to any net benefits produced by an action. |
| Option A: | ethic of virtue |
| Option B: | ethic of care |
| Option C: | Utilitarianism |
| Option D: | Utility |
| 2. | The market for automobiles is an example of? |
| Option A: | Monopolistic competition. |
| Option B: | Duopoly. |
| Option C: | Differentiated oligopoly. |
| Option D: | Pure oligopoly. |
| 3. | Rights that all human beings everywhere possess to an equal extent simply by virtue of being human beings is, |
| Option A: | Right |
| Option B: | Legal right |
| Option C: | Moral rights or human rights |
| Option D: | Characteristic of Rights |
| 4. | The gradual breakdown of ozone gas in the stratosphere above us caused by the release of chlorofluorocarbons (CFCs) into the air. |

| | |
|-----------|--|
| Option A: | ozone depletion |
| Option B: | Global warming |
| Option C: | Pollution |
| Option D: | Greenhouse gases |
| | |
| 5. | Which following statement is explain about Negative Rights? |
| Option A: | Duties of others have to not interfere in certain activities of the person who holds the right. |
| Option B: | Duties of other agents (it is not always clear who) to provide the holder of the right with whatever he or she needs to freely pursue his or her interests. |
| Option C: | Provide a basis for justifying one's actions and for invoking the protection or aid of others |
| Option D: | Are correlated with duties others have toward the person with the right |
| | |
| 6. | The undesirable and unintended contamination of the environment by human activity such as manufacturing, waste disposal, burning fossil fuels, etc. is called as ? |
| Option A: | Pollution |
| Option B: | Resource depletion |
| Option C: | Greenhouse gases |
| Option D: | Global warming |
| | |
| 7. | Discrimination that is not consciously or deliberately sought, but is brought about by stereotypes or as an unintended outcome is called as.. |
| Option A: | Intentional |
| Option B: | Institutional |
| Option C: | Individual |
| Option D: | Unintentional |
| | |
| 8. | Perfectly competitive markets encourage firms to use resources efficiently to keep costs? |
| Option A: | Low |
| Option B: | Moderate |
| Option C: | Zero |
| Option D: | High |
| | |
| 9. | Which of the following is not a category of Sustainability? |
| Option A: | Environmental Sustainability |
| Option B: | Natural Sustainability |
| Option C: | Social Sustainability |
| Option D: | Economic Sustainability |
| | |
| 10. | Which of the following is a characteristic of monopolistic competition? |
| Option A: | Few sellers. |
| Option B: | All of the above are characteristics of monopolistic competition. |
| Option C: | A differentiated product. |
| Option D: | Easy entry into and exit from the industry. |
| | |
| 11. | Business people have the skills to solve? |
| Option A: | All Economic Problems |
| Option B: | All Social Problem |
| Option C: | Some Social Problem |

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| Option D: | All Technical Problem |
| 12. | Which of the following is Problem associated with Contractual Theory? |
| Option A: | Sellers cannot remove all their duties to buyers by getting them to agree to disclaimers of responsibility. |
| Option B: | Safety should not be provided through the market. |
| Option C: | Assumes consumer and seller meet as equals, but seller has more knowledge even then consumer must not rely on the seller. |
| Option D: | Assumes makers of products deal directly with consumers but they do not; however manufacturer's advertisements do form a kind of direct promise to consumers. |
| 13. | The Globalization do not facilitate to |
| Option A: | Removal of control on movement of capital across borders |
| Option B: | Barriers to trade and investment |
| Option C: | Improvements in communication |
| Option D: | Immigration control |
| 14. | What should be Market Approach to Consumer Protection? |
| Option A: | Claims safety is a commodity that should be mandated by government. |
| Option B: | In a market, sellers will provide safety if consumers demand it. |
| Option C: | In a market, the price of safety and the amount sellers provide will not be determined by the costs of providing it and the value consumers place on it |
| Option D: | Safety should not be provided through the market. |
| 15. | Which of the following is not a Indicator of Discrimination? |
| Option A: | Proportion of rich and poor at all economic levels. |
| Option B: | Proportions of minorities and women at lowest economic levels |
| Option C: | Average benefits minorities and women receive compared to others |
| Option D: | Proportions of minorities and women at highest economic levels. |
| 16. | Privacy with respect to a person's physical activities is called as? |
| Option A: | individual privacy |
| Option B: | personal privacy |
| Option C: | physical privacy |
| Option D: | psychological privacy |
| 17. | What is Triple Bottom Line (TBL) ? |
| Option A: | An accounting tool that looks at the impact on people, planet and profits |
| Option B: | A management strategy which states all the attention should be on profits |
| Option C: | An accounting tool that looks at cost, profit and loss. |
| Option D: | A management strategy which focuses on corporate social responsibility |
| 18. | Which of the following general principle is not followed by corporation while practicing CSR: |
| Option A: | Companies should support the inclusion of the principles of the India Global Compact |
| Option B: | Companies should indulge in free marker practices, rejecting any illegal or fraudulent practice and implement effective mechanisms |
| Option C: | Mangers are not responsible to follow and encourage ethical business practices among employees |

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| Option D: | Companies should encourage and facilitate communication and dialogue with its shareholders, investors, employees, Customers and suppliers |
| 19. | Distributing the benefits and burdens fairly among people is called as, |
| Option A: | Rule-utilitarianism |
| Option B: | Rights |
| Option C: | Justice |
| Option D: | Utilitarianism |
| 20. | The moral argument for CSR is.. |
| Option A: | The corporation is a creation of society and should therefore serve its needs. |
| Option B: | The corporation is a legal creation and therefore cannot be a moral agent |
| Option C: | Only Large corporations have the power or resources to address society's problems |
| Option D: | Business decisions will have social and environmental consequences which will be addressed by government. |

| | | |
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| Q2 | Solve any Two Questions out of Three | 10 marks each |
| A | How Ethics is an integral part of Business, Explain with Example | |
| B | What are the Ethics of pollution control. | |
| C | How can the rights of a consumer be defined in a due care theory? Explain with suitable example | |

| | | |
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| Q3 | Solve any Two Questions out of Three | 10 marks each |
| A | Explain in detail Corporate Social Responsibility and Small and Medium Enterprises (SMEs) in India. | |
| B | Why incorporate CSR into PPP for sustainable development? | |
| C | What is TBL? How it is work? | |

University of Mumbai
Examination 2020 under cluster KJSIET

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **Civil Engineering**
Curriculum Scheme: Rev 2016
Examination: BE Semester VIII

Course Code: **CE-C801** Course Name: Design and Drawing of Reinforced Concrete Structures
Time: 2 hour Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks (40 marks) |
|------------|--|
| 1. | If the ratio of long span to short span of the slab is greater than two then this slab is called as |
| Option A: | Two way slab |
| Option B: | One way slab |
| Option C: | Cantilever slab |
| Option D: | Continuous slab |
| 2. | In case of singly reinforced beam if X_u / d is equal to the limiting value $X_{u\max} / d$ then the section is |
| Option A: | Over reinforced section |
| Option B: | Under reinforced section |
| Option C: | Balanced section |
| Option D: | Neutral section |
| 3. | If area of main steel used in slab is 187.33 mm^2 . What is the spacing of 8 mm diameter bar if effective depth of slab is 143 mm |
| Option A: | 350 mm |
| Option B: | 267 mm |
| Option C: | 415 mm |
| Option D: | 518 mm |
| 4. | What is the moment of resistance of singly reinforced concrete beam of 200 mm width and 400 mm effective depth. Take M20 concrete and Fe415 steel. Let $X_{u\max} / d = 0.479$ |
| Option A: | 59.26 KNm |
| Option B: | 53.56 KNm |
| Option C: | 75.21 KNm |
| Option D: | 88.37 KNm |
| 5. | Horizontal upper portion of a step in staircase is called |
| Option A: | Riser |
| Option B: | Landing |
| Option C: | Tread |
| Option D: | Flight |

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| 6. | If number of risers used in stair case are 12 in each flight, then number of treads in each flight are equal to |
| Option A: | 13 |
| Option B: | 11 |
| Option C: | 10 |
| Option D: | 9 |
| 7. | Minimum percentage of distribution steel used in stair case is ----- of gross cross sectional area of waist slab |
| Option A: | 0.15% |
| Option B: | 0.20% |
| Option C: | 0.30% |
| Option D: | 0.12% |
| 8. | What is the area of distribution steel per meter width of stair case, if thickness of waist slab is 220 mm |
| Option A: | 225 mm ² |
| Option B: | 320 mm ² |
| Option C: | 264 mm ² |
| Option D: | 210 mm ² |
| 9. | Toe slab is a part of |
| Option A: | Retaining wall |
| Option B: | Water tank |
| Option C: | Stair case |
| Option D: | Flat slab |
| 10. | Counter fort retaining wall is designed when height of wall is above |
| Option A: | 3 m |
| Option B: | 9 m |
| Option C: | 4 m |
| Option D: | 6 m |
| 11. | A cantilever retaining wall has width of base slab 3 m. Distance of point of application of resultant force from the heel end is 1.813 m. Therefore, its eccentricity is |
| Option A: | 0.6 m |
| Option B: | 0.51 m |
| Option C: | 0.313 m |
| Option D: | 0.78 m |
| 12. | Which I.S code is used for design of water tank |
| Option A: | IS 875 |
| Option B: | IS 800 |
| Option C: | SP 16 |
| Option D: | IS 3370 |

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| 13. | Which type of joint in water tank is provided to serve as a continuity between first cast concrete and second cast concrete |
| Option A: | Rigid joint |
| Option B: | Vertical joint |
| Option C: | Roof slab joint |
| Option D: | Horizontal contraction joint |
| 14. | What is the area of vertical distribution steel of a circular tank by IS code method if thickness of wall is 170 mm. |
| Option A: | 510 mm ² |
| Option B: | 620 mm ² |
| Option C: | 850 mm ² |
| Option D: | 763 mm ² |
| 15. | Lap splices shall not be provided at |
| Option A: | Within a joint |
| Option B: | At mid span |
| Option C: | Long span |
| Option D: | Within a distance of 5d from the face of joint |
| 16. | The capacity of structure or its member is the capacity to undergo large in-elastic deformations without significant loss of strength or stiffness is called |
| Option A: | Response |
| Option B: | Ductility |
| Option C: | Importance factor |
| Option D: | Durability |
| 17. | When column terminate into a footing or mat special confining reinforcement shall extend at least ----- mm into the footing or mat |
| Option A: | 110 mm |
| Option B: | 300 mm |
| Option C: | 200 mm |
| Option D: | 500 mm |
| 18. | A method of pre stressing concrete in which the tendons are tensioned before the concrete is placed is called |
| Option A: | Pre tensioning |
| Option B: | Post tensioning |
| Option C: | Tendon |
| Option D: | Debonding |
| 19. | The grade of concrete for pre stressed member should be in the range of |
| Option A: | M-20 to M-30 |
| Option B: | M-80 to M-100 |
| Option C: | M-30 to M-60 |
| Option D: | M-15 to M-30 |
| 20. | Loss of stress due to elastic deformation of concrete depends upon |
| Option A: | Relaxation of steel |

| | |
|-----------|-----------------------------|
| Option B: | Friction and anchorage slip |
| Option C: | Modular ratio |
| Option D: | Shrinkage of concrete |

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| Q2 | Solve any One (20 Marks) |
| A | Design a 4 m x 6 m interior panel of a two way continuous slab for a live load of 3000 N/m ² . Use M20 concrete and Fe415 steel. |
| B | Design a reinforced concrete cantilever type retaining wall having 5 m tall stem. The wall retains soil level with its top. The soil weighs 18000 N/m ³ and has an angle of repose 30°. The safe bearing capacity of the soil is 200 KN/m ² . Use M20 concrete and Fe415 steel. |
| Q3 | Solve any two (20 Marks) |
| A | Design the part of an open well stair case the steps of flight AB have 150 mm bearing on the wall. The flight AB has a going of 1.5 m and landing slab of 1.5 m on either side of going. Thickness of the wall is 400 mm and width of steps is 1.5 m. Determine the loading on the flight AB if rise is 150 mm and tread is 250 mm. Adopt M20 concrete and Fe415 steel. Live load = 3 KN/m ² . |
| B | Design a circular water tank 12 m diameter and 4 m high by I. S. Code method. The tank rest on firm ground. The wall of tanks is restrained at the base. Use M20 concrete and Fe250 steel. |
| C | Write short note on |
| i | Factors affecting ductility |
| ii | Freyssinet system of post tensioning |

University of Mumbai

Examination 2020 under cluster : KJSIEIT

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021
to 20th January 2021

Program: BE Civil Engineering

Curriculum Scheme: **Rev2016**

Examination: BE Semester VIII

Course Code: CEC 802

Course Name: **Construction Management**

Time: 2 hour

Max. Marks: 80

| | |
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| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
| | |
| 1. | Quality management is performed in _____ phase |
| Option A: | Initiation |
| Option B: | Planning |
| Option C: | Execution |
| Option D: | Closure |
| | |
| 2. | During the construction period, price variation clause in contracts caters to |
| Option A: | Increase in rates of only important materials |
| Option B: | Variation in cost in materials element, labour element and petrol-oil-lubricant element |
| Option C: | Variation in total cost of the project on an ad hoc basis |
| Option D: | Rate of inflation |
| | |
| 3. | The feasibility study is carried out in _____ phase of project life cycle. |
| Option A: | Planning |
| Option B: | Organizing |
| Option C: | Initiation |
| Option D: | Closure |

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| 4. | Which management principle state that orders and instructions should flow down from top to bottom or higher level manager to lower one? |
| Option A: | Division of work |
| Option B: | Scalar Chain |
| Option C: | Unity of direction |
| Option D: | Unity of command |
| 5. | Which management function involves setting goals & objectives and creating specific plans for completing them? |
| Option A: | Planning |
| Option B: | Organizing |
| Option C: | Controlling |
| Option D: | Leading |
| 6. | The shortest possible time in which an activity can be achieved under ideal circumstances is known as _____ |
| Option A: | Pessimistic time estimate |
| Option B: | Optimistic time estimate |
| Option C: | Expected time estimate |
| Option D: | The most likely time estimate |
| 7. | The difference between the maximum time available and the actual time needed to perform an activity is known as _____ |
| Option A: | Free float |
| Option B: | Independent float |
| Option C: | Total float |
| Option D: | Half float |
| 8. | If t_o , t_p and t_m are the optimistic, pessimistic and most likely time estimates of an activity respectively, the expected time t of the activity will be |
| Option A: | $\frac{t_o + 3t_m + t_p}{2}$ |
| Option B: | $\frac{t_o + 3t_m + t_p}{3}$ |
| Option C: | $\frac{t_o + 4t_m + t_p}{4}$ |
| Option D: | $\frac{t_o + 4t_m + t_p}{6}$ |

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| 9. | An expected project completion time follows a normal distribution with a mean of 21 days and a standard deviation of 4 days. What is the probability that the project will be completed in a time between 22 to 25 days inclusive? |
| Option A: | 0.0819 |
| Option B: | 0.7734 |
| Option C: | 0.8413 |
| Option D: | 0.2436 |
| 10. | The order cost per order of an inventory is Rs. 400 with an annual carrying cost of Rs. 10 per unit. The Economic Order Quantity (EOQ) for an annual demand of 2000 units is ----- |
| Option A: | 400 |
| Option B: | 440 |
| Option C: | 480 |
| Option D: | 500 |
| 11. | What are the factors responsible for the growth of HRM? |
| Option A: | Development of scientific management and awakened sense of social responsibility. |
| Option B: | The problem of how the available human resource could effectively minimize the cost and maximize the production. |
| Option C: | Overall development of an individual, in correspondence to achieve the goal the organization. |
| Option D: | Technical factors, awakening amongst workers, attitude of the government, cultural and social system. |
| 12. | Approaches the even out the peaks of resource requirements so that a fixed amount of resources can be employed over time, is known as; |
| Option A: | Resource Management |
| Option B: | Resource levelling |
| Option C: | Resource prioritizing |
| Option D: | Resource generation |
| 13. | ABC analysis is based upon the principle that |
| Option A: | There are usually a few critical items, and many items which are less critical |
| Option B: | The safety stock in terms of volume should be higher for A items than for C items. |
| Option C: | An item is critical if its usage is high |
| Option D: | All items in inventory must be monitored very closely |
| 14. | In the time-cost optimization, using CPM method for network analysis, the crashing of the activities along the critical path is done starting with the activity having |
| Option A: | Longest duration |
| Option B: | Shortest duration |
| Option C: | Least cost slope |
| Option D: | Highest cost slope |

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| 15. | The CPM network is updated |
| Option A: | At regular intervals |
| Option B: | At any time |
| Option C: | At fixed times |
| Option D: | Whenever there is a difference in the planned and actual performance |
| 16. | The optimum duration is the ----- |
| Option A: | The summation of normal duration of each activity in the project |
| Option B: | The summation of normal duration of activities on critical path |
| Option C: | One which gives the minimum total cost for completing the project |
| Option D: | Summation of crash time of activities on critical path |
| 17. | Ensuring the safety, health and welfare of the employees is the primary purpose of the |
| Option A: | Factories Act, 1948 |
| Option B: | Industrial disputes Act, 1947 |
| Option C: | Equal remuneration Act, 1976 |
| Option D: | Payment of wages Act, 1936 |
| 18. | The legislation in construction industry is necessary for ----- |
| Option A: | Social benefits |
| Option B: | Providing mental stability |
| Option C: | Quality control |
| Option D: | Fixing the terms of employment and working conditions |
| 19. | Which of the following involves redesigning of equipment, machinery and material for the safe performance of the jobs? |
| Option A: | Safety engineering |
| Option B: | Safety committee |
| Option C: | Safety training |
| Option D: | Safety campaigns |
| 20. | _____ includes changing in designs or modifications in structures and equipments to reduce hazards on construction sites. |
| Option A: | Administrative controls |
| Option B: | Personal Protective Equipment |
| Option C: | Engineering controls |
| Option D: | Elimination |

| Q2 | Solve any Four out of Six | 5 marks each |
|-----------|--|---------------------|
| A | Explain in detail the contribution made by Henry Fayol in the evolution of management thought. | |
| B | Explain the roles of various agencies involved in any construction project. | |
| C | Write a note on feasibility studies for a construction project. | |
| D | Explain in short Work Breakdown Structure. | |
| E | Explain the stages of planning of a construction project by contractor and owner. | |
| F | Explain the need and purpose of human resource management in construction sector. | |

| Q3 | Solve any Four out of Six | 5 marks each |
|-----------|--|---------------------|
| A | What do you understand by A-B-C analysis? | |
| B | What do you understand by updating? What are the stages of updating? How will you determine frequency of updating? | |
| C | What is time overrun and cost overrun? What are the method to avoid them? | |
| D | What do you understand by OSHA? | |
| E | Write a short note on occupational health hazards in the construction industry. | |
| F | What is Quality control? Explain the role of inspection in quality control. | |

University of Mumbai

Examination 2020 under cluster : KJSIEIT

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021
to 20th January 2021

Program: **Civil Engineering**
Curriculum Scheme: Rev. 2016
Examination: BE Semester VIII

Course Code: CE- DLO8O32

Course Name: Industrial Waste Treatment

Time: 2 hours

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|------------|--|
| 1. | Which of the following is not correct with respect to the effect of oil on treatment systems? |
| Option A: | Foam formation |
| Option B: | Toxic to anaerobic bacteria |
| Option C: | Interferes with settling |
| Option D: | Explosive with pure oxygen |
| 2. | Which of the following represents the amount of oxygen required for the microbial decomposition of the organic matter in river water? |
| Option A: | Biochemical oxygen demand |
| Option B: | Total suspended solids |
| Option C: | Chemical oxygen demand |
| Option D: | Total Kjeldahl nitrogen |
| 3. | The primary objective of stream standards is |
| Option A: | To protect and preserve each stream for its best usage on an equitable basis for both upstream & downstream uses. |
| Option B: | To treat stream water |
| Option C: | To control the following stream standard system |
| Option D: | To establish the stream classification |
| 4. | What is the population equivalent of a city having average sewage flow of 80×10^6 litres / day , domestic sewage quantity is 0.08kg/capita/day and average 5 day BOD is 240 mg/l. |
| Option A: | 210000 persons |
| Option B: | 250000 persons |
| Option C: | 240000 persons |
| Option D: | 200000 persons |
| 5. | Which samples provide a more representative sample of the characteristics of the industrial wastewater for a longer period of time? |
| Option A: | Grab Sample |

| | |
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| Option B: | Composite Sample |
| Option C: | Catch Sample |
| Option D: | Automatic Sample |
| | |
| 6. | Treatability studies does not involve_____ |
| Option A: | Determining whether the waste is amendable to the treatment process |
| Option B: | Finding which pretreatment is required |
| Option C: | Determination of optimal process conditions needed to achieve the desired treatment |
| Option D: | Disposal of waste |
| | |
| 7. | Good housekeeping in any industry can |
| Option A: | Reduce productivity |
| Option B: | Increase fatigue rate |
| Option C: | Increase maintenance and operation cost |
| Option D: | Reduce volume and strength of Industrial waste |
| | |
| 8. | If the BOD ₃ of a wastewater sample is 75 mg/L and reaction rate constant k (base e) is 0.345 per day, the amount of BOD remaining in the given sample after 10 days is |
| Option A: | 3.2 mg/L |
| Option B: | 3.7mg/L |
| Option C: | 3.9 mg/L |
| Option D: | 3.5 mg/L |
| | |
| 9. | The most economical method for neutralization of alkaline waste is |
| Option A: | Producing Carbon-dioxide in Alkaline Wastes |
| Option B: | Using Waste-Boiler-Flue Gas |
| Option C: | Sulfuric-Acid Treatment for Alkaline Wastes |
| Option D: | Carbon - Dioxide Treatment for Alkaline Wastes |
| | |
| 10. | When the deoxygenation rate exceeds the reoxygenation rate, the oxygen sag curve shows _____ in a deficit of oxygen. |
| Option A: | Increase |
| Option B: | Decrease |
| Option C: | Constant |
| Option D: | Same |
| | |
| 11. | Colour and odour of the industrial waste water is removed by the process |
| Option A: | Adsorption |
| Option B: | Coagulation |
| Option C: | Filtration |
| Option D: | Sedimentation |
| | |
| 12. | The sludge treatment process, where sludge is treated with chemicals, is known as |
| Option A: | Dewatering |

| | |
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| Option B: | Thickening |
| Option C: | Conditioning |
| Option D: | Drying |
| | |
| 13. | The ultimate BOD for a waste water having 5-day BOD at 20° C as 158 ppm and deoxygenation rate constant as 0.2 per day is _____ |
| Option A: | L ₀ =200 ppm |
| Option B: | L ₀ =3 13 ppm |
| Option C: | L ₀ =212 ppm |
| Option D: | L ₀ =3 00 ppm |
| | |
| 14. | The discharge of industrial wastes in proportion to the flow of municipal sewage in the sewers or to the stream flow in the receiving river is known as |
| Option A: | Equalization |
| Option B: | Neutralization |
| Option C: | Proportioning |
| Option D: | Self Purification |
| | |
| 15. | Which toxic heavy metal is found in Tannery Industry waste water |
| Option A: | zinc |
| Option B: | aluminum |
| Option C: | copper |
| Option D: | chromium |
| | |
| 16. | Environmental Impact Assessment (EIA) is defined as |
| Option A: | Assessment of Environment |
| Option B: | A report written by government representatives on the planned development impacts of environment, socio-economic issues and culture |
| Option C: | A process of identifying, predicting, and evaluating the likely impacts of a proposed project to define mitigation actions |
| Option D: | Project life-cycle assessment |
| | |
| 17. | In Electroplating Industry Cyanide waste is treated by |
| Option A: | Neutralization |
| Option B: | Reduction of Hexavalent chromium |
| Option C: | Equalization |
| Option D: | Alkaline Chlorination |
| | |
| 18. | In Tannery Industry, the waste water stream produced during manufacturing can be grouped into |
| Option A: | Strong stream and intermittent streams |
| Option B: | Weak and continuous streams |
| Option C: | Strong & intermittent streams, Weak & continuous streams |
| Option D: | Toxic waste stream |
| | |
| 19. | Purpose of sulphitation in cane sugar industry is |
| Option A: | To increase the volume of cane juice |
| Option B: | For bleaching and pH control |
| Option C: | To provide colour |

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| Option D: | For thickening of juice |
| 20. | A Common Effluent Treatment Plant can be changed to combined effluent treatment plant |
| Option A: | when it collects effluent from all the industries. |
| Option B: | when it collects sewage from surrounding localities and treat it with industrial wastewaters. |
| Option C: | when it collects effluent from all the city. |
| Option D: | when it collects effluent from all the small and big industries. |

| | |
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| Q2 (20 Marks) | |
| A | Solve any Two 5 marks each |
| i. | Explain volume reduction and its parameters for Industrial waste. |
| ii. | What is the importance of By-product recovery in the industrial waste treatment? |
| iii. | Write a short note on Activated sludge process and its modifications. |
| B | Solve any One 10 marks each |
| i. | What is Environmental Impact Assessment? Why EIA is done? Explain the same in the following context – i) Screening ii) Scoping iii) Prediction iv) Reporting |
| ii. | Explain with a neat flow sheet manufacturing process of cotton cloth using cotton as a raw material in the textile industry. |

| | |
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| Q3. (20 Marks) | |
| A | Solve any Two 5 marks each |
| i. | Why sampling of stream is necessary? Explain procedure followed in sampling. |
| ii. | Illustrate with flowsheet treatment given to pulp and paper industry effluent. |
| iii. | Discuss about Equalization. Explain the types of Equalization with neat sketch. |
| B | Solve any One 10 marks each |
| i. | A city discharges 250 cumecs of sewage into a river, which is fully saturated with oxygen and flowing at the rate of 4000 cumecs during its lean days with a velocity of 0.22 m/sec. The 5 day BOD of sewage at the given temperature is 270 mg/lit. Find when and where the critical D.O. deficit will occur in the downstream portion of the river and what is its amount? Assume coefficient of purification of the stream (f) as 4.0 and coefficient of deoxygenation (K_D) as 0.13 |

| | |
|-----|---|
| ii. | Explain the treatment given to the dairy industry waste, when the treated effluent discharged to sewer and inland surface water. Also write the characteristics of dairy waste water. |
|-----|---|

University of Mumbai
Examination 2020 under cluster : KJSIET

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **Civil**

Curriculum Scheme: Rev 2016

Examination: BE Semester VIII

Course Code: CE-DLO8033

Course Name: Pavement Design and Construction

Time: 2 hours

Max. Marks: 80

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Note:- All the Questions are compulsory and carry equal marks .

| | |
|-----------|--|
| Q1. | Pick the correct sequence |
| Option A: | Seal coat- Wearing course-Tack coat-Binder coat-Prime coat |
| Option B: | Seal coat- Wearing course-Prime coat-Binder coat-Tack coat |
| Option C: | Seal coat- Binder course-Tack coat-Wearing coat-Prime coat |
| Option D: | Tack coat- Wearing course-Prime coat-Binder coat-Seal coat |
| Q2. | Quality of drainage is considered as Excellent if the water is removed within |
| Option A: | 1 day |
| Option B: | 2 hours |
| Option C: | 5 hours |
| Option D: | 1 week |
| Q3. | Which of these is not function of surface course? |
| Option A: | Resist abrasive forces of traffic |
| Option B: | Provide skid resistant surface |
| Option C: | Reduces the water penetration |
| Option D: | Acts as a structural portion of the pavement which distributes the load |
| Q4. | Axle load for triden axle with dual wheel on either side is taken as ___ kN |
| Option A: | 80 |
| Option B: | 65 |
| Option C: | 148 |
| Option D: | 224 |
| Q5. | Calculate Radius of relative stiffness of 15 cm thick cement concrete slab using following data. Modulus of elasticity of concrete is 2.1×10^5 kg/cm ² ; Poissons Ratio- 0.15 ; Modulus of subgrade reaction- 3 kg/cm ³ |
| Option A: | 77 cm |
| Option B: | 27 cm |
| Option C: | 57 cm |
| Option D: | 67 cm |

| | |
|-----------|--|
| Q6. | Stresses induced in a rigid pavement in Summer Mid-day |
| Option A: | Load Stresses at edge + Temperature stress at edge |
| Option B: | Load Stresses at edge + Temperature stress at edge - Frictional stresses |
| Option C: | Load Stresses at edge + Temperature stress at edge + Frictional stresses |
| Option D: | Load Stresses at edge + Load stress at Corner + Temperature stresses at the edge |
| Q7. | Group index is calculated using following equation where a and b are related to % soil passing through sieve no 200, c is related to liquid limit and d is related to plasticity index |
| Option A: | $0.2 a + 0.005 ac + 0.01 bd$ |
| Option B: | $0.2 a + 0.05 ab + 0.01 cd$ |
| Option C: | $0.2 a + 0.05 ac + 0.01 bd$ |
| Option D: | $0.02 a + 0.005 ac + 0.1 bd$ |
| Q8. | Transverse contraction joint are provided at _____ spacing in airport pavement |
| Option A: | 4-8 meter |
| Option B: | 3-6 meter |
| Option C: | 10-15 meter |
| Option D: | 20-40 meter |
| Q9. | The heavy commercial vehicles are considered if their weight exceeds ____ |
| Option A: | 3.0 t |
| Option B: | 4.0 t |
| Option C: | 5.0 t |
| Option D: | 6.0 t |
| Q10. | Concrete slab is opened for traffic after __ days in case of ordinary portland cement and period can be curtailed to __ days if rapid hardening cement is used. |
| Option A: | 28 and 7 |
| Option B: | 14 and 7 |
| Option C: | 28 and 14 |
| Option D: | 28 and 20 |
| Q11. | During construction of rigid pavement, if the fly ash is blended at site, quantity of fly ash shall be restricted to ____ % by weight of cementitious material |
| Option A: | 10 |
| Option B: | 20 |
| Option C: | 15 |
| Option D: | 5 |
| Q12. | _____ are provided along longitudinal joint to tie two adjacent slabs |
| Option A: | Expansion joint |
| Option B: | Contraction joint |
| Option C: | Tie bar |
| Option D: | Dowel bar |
| Q13. | Based on topography and climate of the location which factor is estimated? |

| | |
|-----------|--|
| Option A: | Temperature |
| Option B: | Pavement quality |
| Option C: | Pavement design method |
| Option D: | Pavement thickness |
| | |
| Q14. | What is the failure in GSB layer of rigid pavement? |
| Option A: | Pumping |
| Option B: | Blowing |
| Option C: | Pumping & blowing |
| Option D: | Fatigue |
| | |
| Q15. | The warping stress is dependent on _? |
| Option A: | Length of slab |
| Option B: | Length and width of slab |
| Option C: | Thickness of slab |
| Option D: | Water content in slab |
| | |
| Q16. | Process of determining the quality of large group by examining part of the group is called as |
| Option A: | Sampling |
| Option B: | Testing |
| Option C: | Quality Assurance |
| Option D: | Quality of conformance |
| | |
| Q17. | Frequency of test for quality control of gradation of aggregate for cement concrete pavement |
| Option A: | 1 test per 20 cum |
| Option B: | 1 test per 15 cum |
| Option C: | 1 test per 50 cum |
| Option D: | 1 test per 30 cum |
| | |
| Q18. | Set of tools or methods that assists decision makers in finding the optimum strategies for providing and maintaining pavements serviceable conditions over a specified time period are called as |
| Option A: | Pavement Condition survey |
| Option B: | Pavement Serviceability index |
| Option C: | Pavement Management system |
| Option D: | Pavement quality control |
| | |
| Q19. | _____ is used for quality control for construction of roads and runways |
| Option A: | IRC-SP-11-1997 |
| Option B: | IRC-81 1997 |
| Option C: | IRC-SP-20-2002 |
| Option D: | IRC-37-2018 |
| | |
| Q20. | _____ is systematic process for collecting, managing, analyzing, and summarizing pavement information to support the selection and |

| | |
|-----------|---|
| | implementation of cost-effective pavement construction, rehabilitation, and maintenance programs. |
| Option A: | Pavement Management system |
| Option B: | Pavement Serviceability index |
| Option C: | Pavement Condition survey |
| Option D: | Pavement quality control |

Q2

A Solve any Two 5 marks each

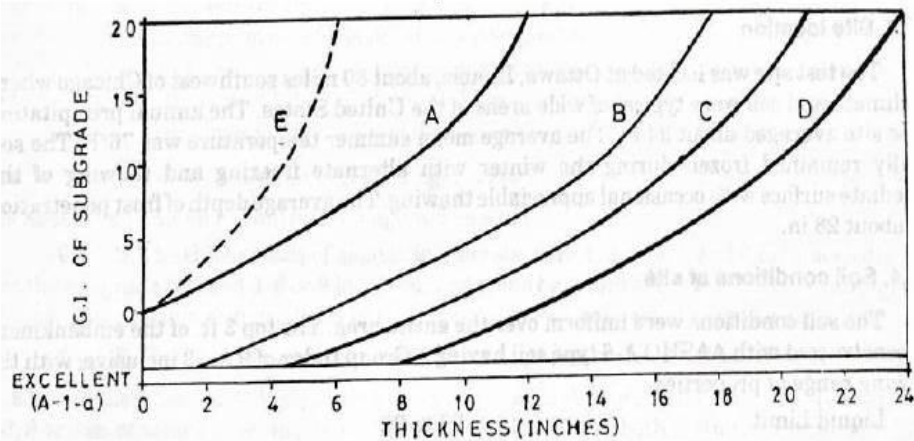
i. Calculate the deflection at the surface of a pavement due to wheel load of 40 KN and tyre pressure of 0.5 MPa. The value of young's modulus of elasticity of the pavement and subgrade may be assumed to be uniformly equal to 20Mpa.

ii. Following data is collected from axle load data survey, determine the equivalent number of standard axle load of 80 KN repetitions per year

| | | | | | | | | |
|--------------|-------|-------|-------|-------|-------|-------|--------|---------|
| Axle load | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 | 90-100 | 100-110 |
| Observations | 57 | 69 | 62 | 81 | 107 | 101 | 114 | 98 |

iii. Subgrade soil has following properties:
 Soil passing through sieve no 200 – 55% ; Liquid limit- 65% ; Plastic limit – 45%
 Design flexible highway pavement (cm) for 400 commercial vehicles per day using group index method

Curve A: Total thickness of sub-base Curve E- Thickness of additional base which may be substituted for sub-base curve A
 Curve B: Total thickness of sub-base + base + surface (light traffic- less than 50 CVPD)
 Curve C: Total thickness of sub-base + base + surface (medium traffic- 50-300 CVPD)
 Curve D: Total thickness of sub-base + base + surface (heavy traffic- more than 300 CVPD)



Pavement thickness design based on Group Index.

B Solve any One 10 marks each

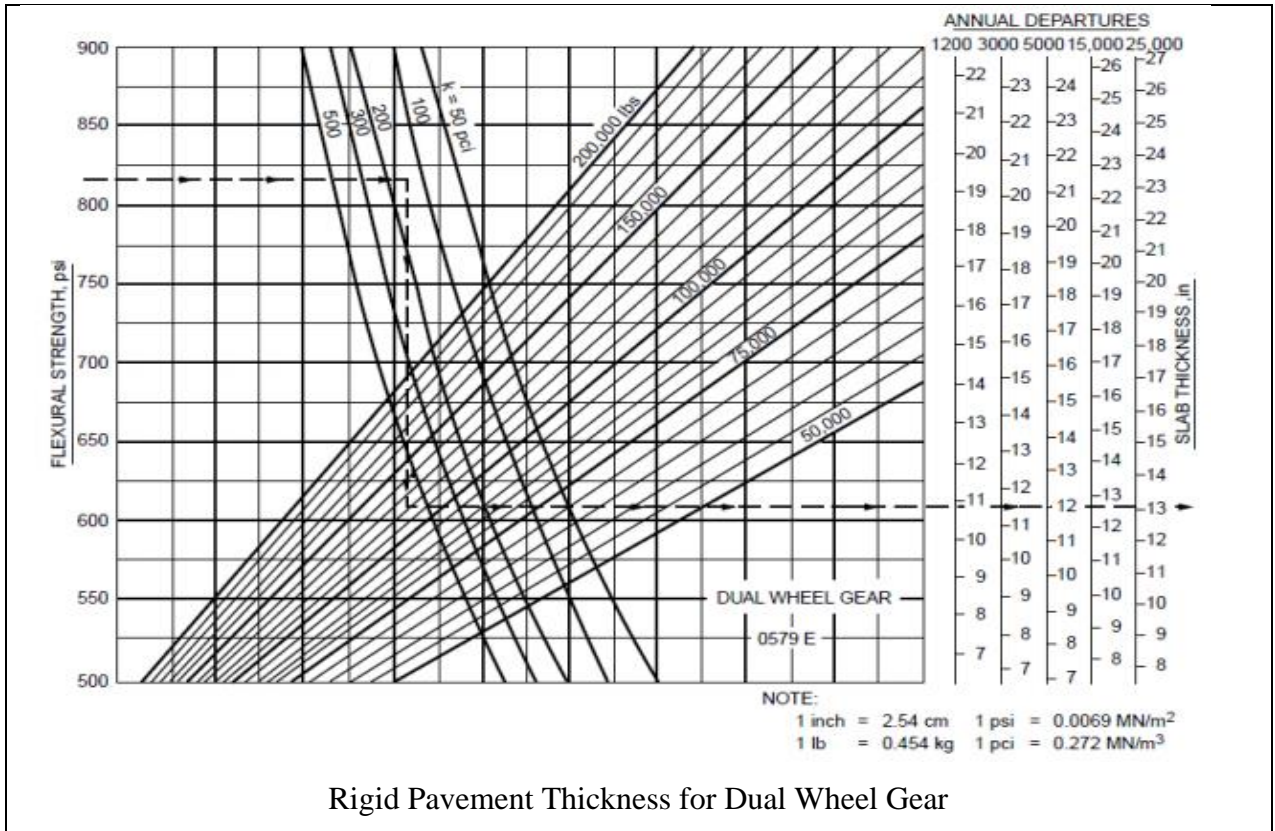
i. Determine the thickness of pavement of concrete pavement using westergaard's Modified corner load formula to support maximum wheel load of 4000kg. Allow 10% of wheel load for Impact. Tyre pressure can be taken as 5.5 kg/cm². Modulus of subgrade reaction = 5 kg/cm³. Flexural strength of concrete is 40kg/cm² Consider factor of safety of 2.

ii. Following data obtained from axle load survey data of 98 vehicles. Assuming standard axle load for Single axel – single wheel (SA-SW), Single Axle- Dual Wheel (SA-DW), Tandem Axle Dual Wheel (TA-DW). Calculate Vehicle Damage factor.

| | | | | | | | |
|-----------------|------------------|--|--|-----------------|---------------|--|--|
| Axle Load Class | No. of Passes of | | | Axle Load Class | No. of Passes | | |
|-----------------|------------------|--|--|-----------------|---------------|--|--|

| | | Axles with | | | | of Axles with | | |
|--|---------|------------|----|----|---------|---------------|----|----|
| | | SA-SW | | | | SA-DW | | |
| | 50-60 | 47 | 1 | -- | 110-120 | -- | 3 | 9 |
| | 60-70 | 33 | 3 | -- | 120-130 | -- | -- | 10 |
| | 70-80 | 18 | 3 | -- | 130-140 | -- | -- | 10 |
| | 80-90 | -- | 14 | | 140-150 | -- | -- | 7 |
| | 90-100 | -- | 13 | 6 | 150-160 | -- | -- | 5 |
| | 100-110 | -- | 3 | 6 | 160-170 | -- | -- | 5 |

| Q3. | |
|------------|--|
| A | Solve any Two 5 marks each |
| i. | Explain the Benkleman Beam with neat sketch and procedure to determine the characteristic deflection w.r.t IRC-81-1997. |
| ii. | Determine Cumulative Standard Axles in msa for 2 lane undivided carriageway using the following data. CBR = 5 %, Initial traffic on completion of construction 300cvpd. Growth rate = 6%, design life = 10 years, VDF = 2.5. |
| iii. | Spacing between the contraction joint of concrete pavement is 4.2 m. Determine the tensile stresses developed in concrete pavement due to contraction if coefficient of friction between bottom of the pavement and supporting layer is 1.1 |
| B | Solve any One 10 marks each |
| i. | Using data given below, calculate the wheel load stresses at interior, edge and corner region of concrete pavement using westergaard's stress equation. Also determine the probable location where slab of pavement is likely to crack due to corner loading. Also calculate the stress using modified westergaard's equation and discuss the result P= 5100 kg ; Modulus of elasticity : 3×10^5 kg/cm ² ; Pavement thickness : 18 cm ; Poisson's Ratio : 0.15 ; Modulus of subgrade reaction : 6 kg/ cm ³ ; Radius of contact area : 15 cm |
| ii. | Determine the required thickness of concrete slab to be used for a given runway used by a design aircraft dual – wheel gear of 110000 Ib gross weight. The 90- day flexural strength of concrete is found to be 815 psi. The modulus of subgrade reaction (K) is 100 pci, and the annual equivalent departures were expected to be 3000.(FAA Method) |



Rigid Pavement Thickness for Dual Wheel Gear

University of Mumbai

Examination 2020 under cluster : KJSIEIT

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: Civil Engineering
Curriculum Scheme: Rev 2016
Examination: BE Semester VIII

Course Code: CE-DLO8034
Time: 2 hours

Course Name: Bridge Engineering and Design
Max. Marks: 80

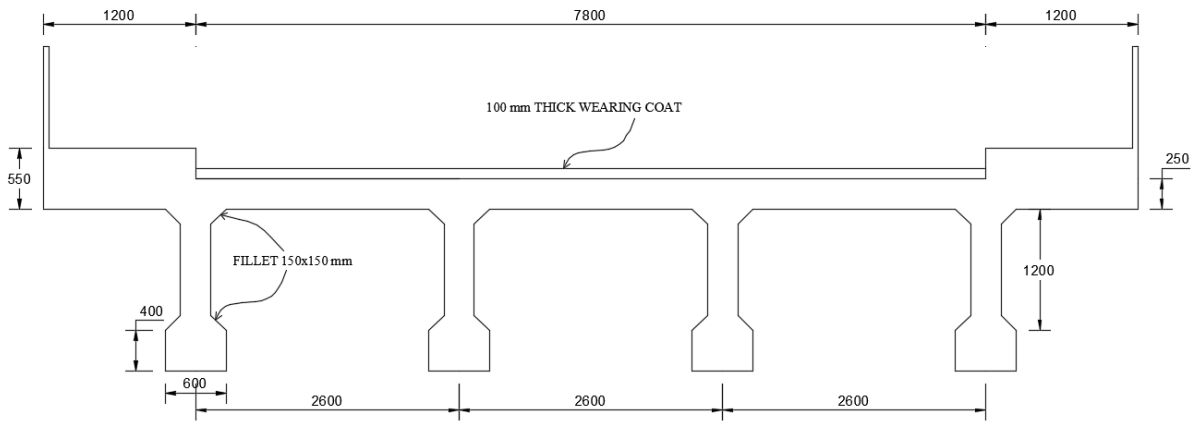
| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|------------|--|
| 1. | Nose to tail Distance of IRC Class AA Loading for tracked vehicle is |
| Option A: | 7200 mm |
| Option B: | 7150 mm |
| Option C: | 7250 mm |
| Option D: | 7000 mm |
| 2. | Contact Length of IRC Class 70 R Loading is |
| Option A: | 4.87 m |
| Option B: | 3.6 m |
| Option C: | 3.7 m |
| Option D: | 4.5 m |
| 3. | Maximum axle load in Class B is |
| Option A: | 69 kN |
| Option B: | 68 kN |
| Option C: | 66 kN |
| Option D: | 67 kN |
| 4. | Width of Tracked Wheel in Class AA Loading is |
| Option A: | 0.84 m |
| Option B: | 0.85 m |
| Option C: | 0.86 m |
| Option D: | 0.83 m |
| 5. | Ground contact area (B and W) for axle load 16 kN is |
| Option A: | 125 & 150 mm |
| Option B: | 125 & 175 mm |
| Option C: | 150 & 150 mm |
| Option D: | 150 & 175 mm |
| 6. | The maximum load transmitted by a single wheel of IRC class A loading is |
| Option A: | 68 kN |
| Option B: | 41 kN |
| Option C: | 57 kN |
| Option D: | 27 kN |

| | |
|-----------|--|
| 7. | Impact Factor for IRC Class AA (tracked vehicle) loading for a span 7 m is |
| Option A: | 25 % |
| Option B: | 17.5 % |
| Option C: | 10 % |
| Option D: | 15 % |
| 8. | Calculate the value of effective width of dispersion, Where Depth of WC= 0.08m Contact width of wheel= 0.5 m B and L= 9.5 m and 6.4 m respectively |
| Option A: | 4 m |
| Option B: | 5.05 m |
| Option C: | 5.5 m |
| Option D: | 6 m |
| 9. | In designing bridge deck slabs for IRC Class AA tracked load, maximum shear force develops when the tracked load is |
| Option A: | At the centre of span |
| Option B: | At quarter span |
| Option C: | Adjacent to the support |
| Option D: | At 1/3 of span |
| 10. | Eccentricity of Cables for Prestressed concrete bridge is given as |
| Option A: | $\frac{z_t \cdot z_b (f_{inf} - f_{sup})}{A(f_{sup} \cdot z_t + f_{inf} \cdot z_b)}$ |
| Option B: | $\frac{z_t \cdot z_b (f_{sup} - f_{inf})}{A(f_{sup} \cdot z_t + f_{inf} \cdot z_b)}$ |
| Option C: | $\frac{z_t \cdot z_b (f_{sup} - f_{inf})}{A(f_{sup} \cdot z_b + f_{inf} \cdot z_t)}$ |
| Option D: | $\frac{A(f_{sup} \cdot z_b + f_{inf} \cdot z_t)}{z_t \cdot z_b (f_{sup} - f_{inf})}$ |
| 11. | Minimum Prestressing force is given by |
| Option A: | $\frac{A(F_{inf} \cdot Z_b + F_{sup} \cdot Z_t)}{Z_b + Z_t}$ |
| Option B: | $\frac{(F_{inf} \cdot Z_t + F_{sup} \cdot Z_b)}{Z_b + Z_t}$ |
| Option C: | $\frac{A(F_{inf} \cdot Z_t + F_{sup} \cdot Z_b)}{Z_b}$ |
| Option D: | $\frac{(F_{inf} \cdot Z_t + F_{sup} \cdot Z_b)}{Z_t}$ |
| 12. | The design bending moment and shear force in balanced cantilever bridge deck are determined by using |
| Option A: | Moment distribution method |
| Option B: | Influence line diagram |
| Option C: | Slope deflection method |
| Option D: | Kani's Method |

| | |
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| 13. | The maximum negative moment in a double cantilever bridge deck is subjected to dead load and live load develops at |
| Option A: | The end support |
| Option B: | Middle of simply supported span |
| Option C: | Interior support |
| Option D: | At Articulation |
| 14. | A end supports of the superstructure of a bridge are called __ |
| Option A: | Pier |
| Option B: | Abutment |
| Option C: | Wingwall |
| Option D: | Column |
| 15. | Pneumatic caisson is a type of |
| Option A: | Well foundation |
| Option B: | Pile foundation |
| Option C: | Raft foundation |
| Option D: | Open caisson |
| 16. | Minimum width of Pier should be= |
| Option A: | 500 mm |
| Option B: | 600 mm |
| Option C: | 700 mm |
| Option D: | 800 mm |
| 17. | Due to effect of buoyancy during floods, the dead weight of pier |
| Option A: | Increases |
| Option B: | Remains the same |
| Option C: | Decreases |
| Option D: | Depends upon material |
| 18. | For a stability of the pier subjected to various types of load, it is safer to ensure that the eccentricity of the resultant force acting at a base of the pier of width should not exceed |
| Option A: | $b/2$ |
| Option B: | $b/6$ |
| Option C: | $b/12$ |
| Option D: | $b/9$ |
| 19. | A pier is an intermediate supporting structure of a bridge which transfers the load directly to |
| Option A: | Foundation |
| Option B: | Abutment |
| Option C: | Soil |
| Option D: | Wing-walls |
| 20. | Which of the following is not the component of substructure of a bridge? |
| Option A: | Pier |
| Option B: | Abutment |
| Option C: | Wing-walls |

Q2

| | | |
|----------|--|----------------------|
| A | Solve any Two | 5 marks each |
| i. | Discuss incremental method for Launching a girder | |
| ii. | What is Lattice girder bridge? | |
| iii. | What is the different method of sinking a well? Explain any one method in brief | |
| B | Solve any One | 10 marks each |
| i. | Determine Design Shear Force on longitudinal girder of a 30m span bridge, due to IRC Class 70R tracked vehicle and self-weight of bridge superstructure. Clear carriage width is 7.8m, footpath on either side is 1.2m and cross girders are provided at 5m c/c. Thickness of deck slab is 250mm thickness of wearing coat is 100mm. Area of cross girder is 70% of area of longitudinal girder. | |



| | | |
|-----|---|--|
| ii. | <p>A simply supported post-tensioned prestressed concrete deck slab bridge of 12m effective span is designed to carry LLBM 190.78kNm & LLSF 71.32kN. Verify its safety in flexure and shear (preferably uncracked) for the following specifications.</p> <p>Carriage width: 7.5m; Footpath on either side: 1.5m; Wearing coat: 100mm; Depth of deck slab: 500mm; Initial strength of concrete is 50MPa and characteristic strength is 60MPa Characteristic strength f_p of prestressing steel is 1600MPa Cables are tensioned to 1000kN initially and spaced 300mm c/c at 100mm from soffit of the slab at mid span. Prestressing force in each cable accounting all losses is 800kN. Consider Moderate environmental conditions.</p> | |
|-----|---|--|

Q3

| | | |
|----------|--|----------------------|
| A | Solve any Two | 5 marks each |
| i. | What do you mean by “Economic Span Length” of bridge? Develop equation for same. | |
| ii. | What is Well foundation? What are the various shape of well foundation? Also sketch components of well foundation. | |
| iii. | Define Bearing. Enlist the different types of bearing. Explain any one. | |
| B | Solve any One | 10 marks each |

| | |
|-----|--|
| i. | <p>Calculate the LLBM for the RCC slab culvert for National highway to suit the following requirements:</p> <ul style="list-style-type: none"> • Carriage way: 7.5 m • Footpath: 1 m on either side • Effective span: 6.4 m • Material: M25 and Fe 415 HYSD bars • Live load: IRC class A • Wearing coat: 80 mm thick |
| ii. | <p>Design a post tension concrete slab bridge deck for the following data</p> <ul style="list-style-type: none"> • Clear span 9 m • Width of bearing 400 mm • Clear width of roadway 7.5 m • Footpath 1 m on either side • Kerbs 600 mm wide and 300 mm deep • Thickness of wearing coat 80 mm • IRC Class AA Tracked vehicle • Class I structure • M20 Grade concrete and 7 mm dia high tensile wires with an ultimate strength of 1500 N/mm^2 housed in cables with 12 wires and anchored by Freyssinet anchorages of 150 mm diameter. For supplementary reinforcement use Fe 415. • Assume compressive strength of concrete at transfer as 35 N/mm^2 and loss ratio 0.8 |

University of Mumbai

Examination 2020 under cluster : KJSIEIT

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021 to 20th January 2021

Program: **Civil Engineering**
Curriculum Scheme: Rev. 2016
Examination: BE Semester VIII

Course Code:CE-DLO8035 Course Name: Appraisal & Implementation of Infrastructure Projects
Time: 2 hours Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|------------|---|
| 1. | Which of the following statement(s) is/are FALSE? I. Project success follows a quadruple constraint, consisting of time, cost, quality and functionality and client satisfaction. II. Key performance indicators are parameters, indicators or values that can be measured to evaluate whether a project is successful or not where as Success factors are conditions or factors that must be present for a project to be successful. III. Key performance indicators may be observed and influenced during project execution. Success factors can only be measured after a project has been completed. IV. A perfect project management organization is no guaranty for a successful project. Opposite, unsuccessful project management may complete a project successfully. |
| Option A: | I and II |
| Option B: | Only III |
| Option C: | I, II and IV |
| Option D: | All of the statements I,II,III and IV |
| 2. | Which stage of the of the project management life cycle needs the maximum time of completion? |
| Option A: | Conceptualization |
| Option B: | Planning |
| Option C: | Execution |
| Option D: | Termination |
| 3. | Appraisal of Infra structure projects consists of which essential stage |
| Option A: | Social Appraisal |
| Option B: | Political Support |
| Option C: | Techno Economical Feasibility Report |
| Option D: | Legislative documentation |
| 4. | Pre feasibility Report of Infra structure projects requires clearance from |
| Option A: | Committee of Public Investment Board |
| Option B: | Standing Committee |
| Option C: | Joint committee |
| Option D: | Review committee |

| | |
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| | |
| 5. | The economic feasibility of a project can be assessed by |
| Option A: | Payback period method |
| Option B: | Gross investment method |
| Option C: | Net investment method |
| Option D: | Sinking fund method. |
| | |
| 6. | A market where the potential consumers face a severely limited number of competitive suppliers is known as_____ |
| Option A: | Wholesale market |
| Option B: | Retail market |
| Option C: | Captive market |
| Option D: | Stock market |
| | |
| 7. | A technical institute is finding mean of GPA for their students. They are collecting data from their college exam cell. It is an example of _____ |
| Option A: | Primary Data |
| Option B: | Secondary Data |
| Option C: | Experimental Data |
| Option D: | Qualitative Data |
| | |
| 8. | CIF price stands for _____ |
| Option A: | Cost, Insurance & Freight |
| Option B: | Cargo, Insurance & Freight |
| Option C: | Cost, Inspection & Freight |
| Option D: | Cargo, Insurance & Free Demonstration |
| | |
| 9. | The_____ method of demand forecasting is categorized under casual method |
| Option A: | Trend projection method |
| Option B: | Delphi method |
| Option C: | Jury of executive method |
| Option D: | Consumption level method |
| | |
| 10. | Appropriate technology refers to those methods of production which are suitable to local_____, social and cultural conditions |
| Option A: | religious |
| Option B: | economic |
| Option C: | climatic |
| Option D: | topographic |
| | |
| 11. | The two major environmental key issues related to the byproduct of the production process are |
| Option A: | deforestation and desalination |
| Option B: | Reduction in groundwater penetration and precipitation |
| Option C: | effluents and emission |
| Option D: | Extinction of species and reduction in fresh water bodies |
| | |
| 12. | Which is the best organizational structure in Project Management Professionals |

| | |
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| | |
| Option A: | line |
| Option B: | line and staff |
| Option C: | functional |
| Option D: | matrix |
| | |
| 13. | A project involve a cash outlay of rupees 8 lacs as an initial investment and generate cash inflow of rupees 1.5 lacs, 1.5 lacs, 2 lacs, 3 lacs, 1 lacs and 2 lacs in the 1st year, 2nd year 3rd year, 4th year, 5th year and 6th year respectively. For this project undiscounted payback period will be |
| Option A: | 3 years |
| Option B: | 5 years |
| Option C: | 4 years |
| Option D: | 6 years |
| | |
| 14. | The internal rate of return (IRR) of a project is the discounted rate which makes its net present value (NPV) equal to |
| Option A: | Zero (0) |
| Option B: | One (1) |
| Option C: | Hundred (100) |
| Option D: | Minus one (-1) |
| | |
| 15. | Benefit to cost ratio is the ratio of |
| Option A: | investment divided by present value of benefit |
| Option B: | (present value of benefit - investment) divided by investment |
| Option C: | present value of benefit divided by investment |
| Option D: | investment divided by (present value of benefit - investment) |
| | |
| 16. | The cost of debt funds is usually_____ the cost of equity fund |
| Option A: | less than |
| Option B: | greater than |
| Option C: | non comparable to |
| Option D: | equal to |
| | |
| 17. | _____ consists of depreciation charges and retained earnings |
| Option A: | Equity |
| Option B: | Internal Accruals |
| Option C: | Securities |
| Option D: | Working capital advances |
| | |
| 18. | In built lease and transfer structure of PPP projects, the private entity _____ and _____ a complete facility, sells to the government, simultaneously lease it back for a predefined period to operate it as a business and finally transfer it to the government at a predetermined price |
| Option A: | Design and Builds |
| Option B: | Purchase and Demolition |
| Option C: | Repair and rehabilitate |
| Option D: | Retrofit and repair |
| | |

| | |
|-----------|--|
| 19. | Generally electricity generation using coal or gas is an example of |
| Option A: | BOO Structure |
| Option B: | BOT Structure |
| Option C: | BOOT Structure |
| Option D: | BLT Structure |
| 20. | The Eurocurrency loans has a floating rate of interest linked to SIBOR that stands for |
| Option A: | Singapore Intra bank Offered Rate |
| Option B: | Singapore International Offered Rate |
| Option C: | Singapore Interbank Offered Rates |
| Option D: | Singapore Infra bank Offered Rate |

| | | |
|------------|---|---------------------|
| Q.2 | Solve any Four out of Six | 5 marks each |
| (A) | Explain SWOT analysis and how will you discriminate between internal and external factors that affects the SWOT results | |
| (B) | Draw the schematic diagram of feasibility study for a project | |
| (C) | What are the essentials of Financial Section of Detailed Project Report | |
| (D) | Enumerate the Sources of Secondary data for market demand forecasting | |
| (E) | A firm planning to manufacture fairness facial cream for males in India tried to estimate its potential sales of 100 ml bottle of cream with following data: Adolescent and Adult male population in the country: 100 million. Proportion of Adolescent and Adult male population not fair in colour: 70 percent. Proportion of Adolescent and Adult male population not fair and using fairness cream: 50 percent. A 100 ml bottle of cream last for half month when applied once in a day on face only by one person. Proportion of the fairness facial cream market the firm could capture is 20 percent. What will be the Potential Annual Sale the firm could capture for 100 ml fairness facial cream bottle. | |
| (F) | A company has total current assets (TCA) as Rs 100 lacs and other current liabilities (OCL) are Rs 20 lacs. What will be the working capital Gap (WCG). What will be the maximum permissible bank finance (MPBF) extended as per the second method prescribed by Tandon Committee norm wherein the borrower has to arrange for 25 percent of TCA as margin. Also find the minimum Current Ratio by this second method. | |
| Q.3 | Solve any Four out of Six | 5 marks each |
| (A) | How Finance can be raised in International Markets | |
| (B) | Differentiate between BOT, BOOT and BOO structure of PPP. | |
| (C) | Elaborate the technical analysis with respect to materials and inputs for production/ process/construction. | |

| | (D) Enumerate the factors that are to be critically studied for technical appraisal of a project. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|--|-----------------|-----------------|-----------------|-----------------|-------------|-------------|--------------|--|--|----------|-----------|-----------|-----|-----------|-------------|-----|-------------|-------------|-----|-------------|-------------|-----|-------------|-------------|-----|-------------|-------------|
| | <p data-bbox="357 237 1374 342">(E) By Net Present Value Analysis, Find out whether investment on Machine A is better or on Machine B. The discounting rate is to be taken as 12 percent.</p> <table border="1" data-bbox="357 378 956 1088"> <thead> <tr> <th data-bbox="357 378 528 483">Machine type</th> <th data-bbox="528 378 743 483">Machine A (Rs.)</th> <th data-bbox="743 378 956 483">Machine B (Rs.)</th> </tr> </thead> <tbody> <tr> <td data-bbox="357 483 528 589">Cost of machine</td> <td data-bbox="528 483 743 589">2,00,000.00</td> <td data-bbox="743 483 956 589">2,00,000.00</td> </tr> <tr> <td colspan="3" data-bbox="357 589 956 712">Cash inflows</td> </tr> <tr> <td data-bbox="357 712 528 817">1st year</td> <td data-bbox="528 712 743 817">30,000.00</td> <td data-bbox="743 712 956 817">75,000.00</td> </tr> <tr> <td data-bbox="357 817 528 873">2nd</td> <td data-bbox="528 817 743 873">70,000.00</td> <td data-bbox="743 817 956 873">1,00,000.00</td> </tr> <tr> <td data-bbox="357 873 528 929">3rd</td> <td data-bbox="528 873 743 929">1,50,000.00</td> <td data-bbox="743 873 956 929">1,60,000.00</td> </tr> <tr> <td data-bbox="357 929 528 985">4th</td> <td data-bbox="528 929 743 985">1,80,000.00</td> <td data-bbox="743 929 956 985">1,20,000.00</td> </tr> <tr> <td data-bbox="357 985 528 1041">5th</td> <td data-bbox="528 985 743 1041">1,20,000.00</td> <td data-bbox="743 985 956 1041">1,30,000.00</td> </tr> <tr> <td data-bbox="357 1041 528 1088">6th</td> <td data-bbox="528 1041 743 1088">2,30,000.00</td> <td data-bbox="743 1041 956 1088">2,60,000.00</td> </tr> </tbody> </table> | Machine type | Machine A (Rs.) | Machine B (Rs.) | Cost of machine | 2,00,000.00 | 2,00,000.00 | Cash inflows | | | 1st year | 30,000.00 | 75,000.00 | 2nd | 70,000.00 | 1,00,000.00 | 3rd | 1,50,000.00 | 1,60,000.00 | 4th | 1,80,000.00 | 1,20,000.00 | 5th | 1,20,000.00 | 1,30,000.00 | 6th | 2,30,000.00 | 2,60,000.00 |
| Machine type | Machine A (Rs.) | Machine B (Rs.) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cost of machine | 2,00,000.00 | 2,00,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Cash inflows | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1st year | 30,000.00 | 75,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2nd | 70,000.00 | 1,00,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3rd | 1,50,000.00 | 1,60,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4th | 1,80,000.00 | 1,20,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5th | 1,20,000.00 | 1,30,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6th | 2,30,000.00 | 2,60,000.00 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p data-bbox="357 1169 1406 1350">(F) Explain weighted marginal cost of capital. A company uses equity, preference and debt in proportions 40%, 20% and 40% respectively. If the components cost of equity, preference and debt are 18 %, 12% and 8% respectively. Calculate the weighted average cost of capital (WACC).</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

University of Mumbai

Examination 2020 under cluster : KJSIEIT

Examinations Commencing from 23rd December 2020 to 6th January 2021 and from 7th January 2021
to 20th January 2021

Program: Civil Engineering
Curriculum Scheme: Rev 2016
Examination: BE Semester VIII

Course Code: CE –DLO8037

Course Name: Applied Hydrology and Flood Control

Time: 2 hours

Max. Marks: 80

| Q1. | Choose the correct option for following questions. All the Questions are compulsory and carry equal marks |
|-----------|--|
| 1. | Orographic precipitation occurs due to air masses being lifted to higher altitudes by |
| Option A: | the density difference of air masses |
| Option B: | a frontal action |
| Option C: | the presence of mountain barriers |
| Option D: | extra tropical cyclones |
| 2. | The Double mass curve technique is adopted to |
| Option A: | check the consistency of rain gauge records |
| Option B: | to find the average rainfall over a number of years |
| Option C: | to find the number of rain gauges required |
| Option D: | to estimate the missing rainfall data |
| 3. | A one day rainfall of 18 hours at Station C was found to have a return period of 50 years. The probability that a one-day rainfall of this or larger magnitude will not occur at station C during next 50 years is |
| Option A: | 0.636 |
| Option B: | 0.020 |
| Option C: | 0.364 |
| Option D: | 0.371 |
| 4. | Lysimeter is used to measure |
| Option A: | infiltration |
| Option B: | evaporation |
| Option C: | evapotranspiration |
| Option D: | vapour pressure |
| 5. | The rainfall on five successive days on a catchment was 2, 6, 9, 5 and 3 cm. If the ϕ -index for the storm can be assumed to be 3 cm/day, the total direct runoff from the catchment is |
| Option A: | 20 cm |
| Option B: | 11 cm |
| Option C: | 10 cm |
| Option D: | 22 cm |

| | |
|-----------|---|
| 6. | If the wind velocity at a height of 4 m above ground is 6 km/h, its value at a height of 12 m above ground can be expected to be in km/h about: |
| Option A: | 5.75 |
| Option B: | 6.53 |
| Option C: | 7.02 |
| Option D: | 8.05 |
| 7. | The slope-area method is extensively used in |
| Option A: | Development of rating curve |
| Option B: | Estimation of flood discharge based on high water marks |
| Option C: | Cases where shifting control exist |
| Option D: | Cases where backwater effect the pressure |
| 8. | An ephemeral stream |
| Option A: | is one which always carries some flow |
| Option B: | does not have any base flow contribution |
| Option C: | is one which has limited contribution of groundwater in wet season |
| Option D: | is one which carries only snow-melt water. |
| 9. | Streams that contribute to the ground water are called |
| Option A: | effluent streams |
| Option B: | groundwater streams |
| Option C: | influent streams |
| Option D: | perennial streams |
| 10. | The rainfall is 10mm/hr on an area of one hectare. The runoff value will be equal to |
| Option A: | 1000 m ³ /hr |
| Option B: | 100 m ³ /hr |
| Option C: | 10 m ³ /hr |
| Option D: | 1 m ³ /hr |
| 11. | The basic assumptions of the unit-hydrograph theory are. |
| Option A: | nonlinear response and time invariance |
| Option B: | time invariance and linear response |
| Option C: | linear response and linear time variance |
| Option D: | nonlinear time variance and linear response. |
| 12. | A triangular DRH due to a storm has a time base of 80 hrs and a peak flow of 50 m ³ /s occurring at 20 hours from the start. If the catchment area is 144 km ² , the rainfall excess in the storm was |
| Option A: | 20 cm |
| Option B: | 7.2 cm |
| Option C: | 5 cm |
| Option D: | 1.5 cm |
| 13. | The shape of the recession limb of hydrograph depends on: |
| Option A: | storm characteristics |
| Option B: | basin characteristics |

| | |
|-----------|--|
| Option C: | storm and basin characteristics |
| Option D: | temprature |
| | |
| 14. | The time required by rain water to reach the outlet of drainage basin, is generally Called as |
| Option A: | time of concentration |
| Option B: | time of overland flow |
| Option C: | concentration time of overland flow |
| Option D: | duration of the rainfall |
| | |
| 15. | The probability that a hundred-year flood may not occur at all during the 50 year life of a project is |
| Option A: | 0.395 |
| Option B: | 0.001 |
| Option C: | 0.605 |
| Option D: | 0.133 |
| | |
| 16. | The standard project flood is |
| Option A: | Smaller than probable maximum flood in the region |
| Option B: | The same as the design flood used for all small hydraulic structures |
| Option C: | Larger than the probable maximum flood by a factor implying factor of safety |
| Option D: | The same as the probable maximum flood |
| | |
| 17. | The prism storage in a river reach during the passage of a flood wave is |
| Option A: | a constant |
| Option B: | a function of inflow and outflow |
| Option C: | function of inflow only |
| Option D: | function of outflow only |
| | |
| 18. | The volume of water that can be extracted by force of gravity from a unit volume of aquifer material is called |
| Option A: | specific retention |
| Option B: | specific yield |
| Option C: | specific storage |
| Option D: | specific capacity |
| | |
| 19. | A sand sample was found to have a porosity of 40%. For an aquifer of this material, the specific yield is |
| Option A: | 40% |
| Option B: | > 40% |
| Option C: | < 40% |
| Option D: | dependent on the clay fraction |
| | |
| 20. | The specific capacity of a well in confined aquifer under equilibrium conditions and within the working limits of drawdown |
| Option A: | can be taken as constant |
| Option B: | decreases as the drawdown increases |
| Option C: | increases as the drawdown increases |
| Option D: | increases or decreases depending upon the size of the well |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|--|-----------|-------|-------|-------|-------|-------|-------|-------|-------------------------------|-----|-----|-----|-----|-----|-----------------------------------|------|-----|-----|-----|-----|-----|----|----|----|----|----|---|---|
| Q2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | Solve any Two 5 marks each | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| i. | Describe a hydrologic cycle. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ii. | Explain the procedure for supplementing the missing rainfall data. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| iii. | Describe the slope-area method of measurement of flood discharge in a stream. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | Solve any One 10 marks each | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| i. | <p>Given below are observed flows from a storm of 6-h duration on a stream with a catchment area of 500 km².</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Time (h)</td> <td>0</td> <td>6</td> <td>12</td> <td>18</td> <td>24</td> <td>30</td> <td>36</td> <td>42</td> <td>48</td> <td>54</td> <td>60</td> <td>66</td> <td>72</td> </tr> <tr> <td>Observed flow (m³/s)</td> <td>0</td> <td>100</td> <td>250</td> <td>200</td> <td>150</td> <td>100</td> <td>70</td> <td>50</td> <td>35</td> <td>25</td> <td>15</td> <td>5</td> <td>0</td> </tr> </table> <p>Assuming base flow to be zero, derive the ordinates of 6-h unit hydrograph</p> | Time (h) | 0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | Observed flow (m ³ /s) | 0 | 100 | 250 | 200 | 150 | 100 | 70 | 50 | 35 | 25 | 15 | 5 | 0 |
| Time (h) | 0 | 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | | | | | | | | | | | | | | | | |
| Observed flow (m ³ /s) | 0 | 100 | 250 | 200 | 150 | 100 | 70 | 50 | 35 | 25 | 15 | 5 | 0 | | | | | | | | | | | | | | | | |
| ii. | <p>The following are the coordinates of a smooth curve drawn to best represent the stage discharge data of a river.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td>Stage (m)</td> <td>20.80</td> <td>21.42</td> <td>21.95</td> <td>23.37</td> <td>23.00</td> <td>23.52</td> <td>23.00</td> </tr> <tr> <td>Discharge (m³/s)</td> <td>100</td> <td>200</td> <td>300</td> <td>400</td> <td>600</td> <td>800</td> <td>1000</td> </tr> </table> <p>Determine the stage corresponding to zero discharge.</p> | Stage (m) | 20.80 | 21.42 | 21.95 | 23.37 | 23.00 | 23.52 | 23.00 | Discharge (m ³ /s) | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | | | | | | | | | | | | |
| Stage (m) | 20.80 | 21.42 | 21.95 | 23.37 | 23.00 | 23.52 | 23.00 | | | | | | | | | | | | | | | | | | | | | | |
| Discharge (m ³ /s) | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | | | | | | | | | | | | | | | | | | | | | | |

| | |
|------------|--|
| Q3. | |
| A | Solve any Two 5 marks each |
| i. | Explain Thiessen-Mean method. |
| ii. | Write short note on 'Reservoir evaporation and methods for its reduction. |
| iii. | What are the limitations of flood frequency studies? |
| B | Solve any One 10 marks each |
| i. | Describe the Muskingum method of routing of inflow hydrograph through a channel reach. |
| ii. | The discharge from fully penetrating well operating under a steady state in a confined aquifer of 35 m thickness is 3000 lpm. Values of drawdown at two observation wells 12 and 120 m away from the well are 3.0 and 0.3 m respectively. Determine the permeability of the aquifer. |