



# **GOVERNMENT COLLEGE OF ENGINEERING AND CERAMIC TECHNOLOGY**

*Established 1941*

Accredited by NAAC with Grade A

(2015)

*73, Abinash Chandra Banerjee Lane*

*Kolkata-700010*

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*Documents for*

*Deciding the modalities  
of examinations during  
COVID-19 affected  
pandemic*

# **Government College of Engineering and Ceramic Technology**

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## **Meeting to decide the modalities of Final semester examinations (Both UG/PG)**

**Platform:** Google meet using the G-Suite of GCECT

**Date:** 11.06.2020

**Time:** 11:00-12:45Hrs

### **Members present:**

Dr. KrishnenduChakrabarty, Principal

Dr. RituparnaSen, HOD, Ceramic Technology

Dr.KalpanaSaha (Roy), HOD, Computer Science and Engineering

Dr. Debdarpan Khan, HOD, Basic Science, Engineering and Humanities

Prof. Ranjan Ray

Prof. Ram Chandra Das

Dr. KrishnenduDutta

Dr.Kaberi Das

Mrs. ParamitaDey

Shri ParthaHaldar

The following members were granted leave of absence

Dr.MousumiMaitra, HOD, Information Technology

Dr.SrimantaPatra

1. It is unanimously decided that every effort would be made to publish the final semester results latest by 31<sup>st</sup> July, 2020.

2. It is resolved that due to the pandemic of COVID-19 and the need for completion of final year examination in time, the modalities for semester end examination for B.Tech. 8<sup>th</sup> semester theory papers are to be changed and the component of evaluations are appended below.

(i) 25 marks continuous evaluation/internal assessment as per existing academic regulations.

(ii) Instead of 75 marks written exam, there will be two modes of evaluation (a) 50 marks online MCQ test and (b) 25 marks viva-voce for each theory papers.

3. It is further resolved that the each faculties, those who are associated with teaching of 8<sup>th</sup> semester theory papers of various UG programmes will have to send 50 MCQ questions (1 mark each with one correct option in MS word format) to the respective HOD latest **by 20<sup>th</sup> June, 2020** through E-mail. The correct answer must be highlighted in each question. It is also decided that depending upon the need of the subject (numerical based subject) the marks for MCQ questions may vary. The HODs are entrusted to moderate the paper and all such process must be completed latest by 30<sup>th</sup> June, 2020.

4. It is also resolved that an online examination form fill up process for B.Tech 8<sup>th</sup> semester (without exam-fees) will be initiated with proper notification in college website immediately and the fees will be collected from the students before distribution of final semester grade card.

5. It is also decided that on scrutiny of such forms, the COE will approach the HODs for name of paper setter for backlog papers of 6<sup>th</sup> semester B.Tech. programme. The paper setter has to set 50 marks comprising of 50 MCQ type in reference to clause 3. above. The HODs are entrusted to moderate the paper and all such procedure must be completed latest by 30<sup>th</sup> June, 2020. This 6<sup>th</sup> sem backlog exam is exclusively for 8<sup>th</sup> sem regular students and treat it as special backlog under the crisis of COVID19.

6. It is also decided that the backlog exam of M.Tech. 2<sup>nd</sup> semester, IT for students of 4<sup>th</sup> Sem, M.Tech, IT, will be taken in conventional mode as soon as the college resumes its normal academic activities.

7. The 50 marks MCQ test will be conducted by the COE through Google form in online mode as per the examination schedule already published in the college website. In case, due to connectivity issue or some other unforeseen reasons, if a student can not appear in the online test, a similar test will be arranged within few days after repeating the whole process for the particular student.

8. The evaluation of final semester Project and Grand Viva evaluation were decided to be undertaken by 30<sup>th</sup> June, 2020, followed by submission of marks to the COE by 04<sup>th</sup> July, 2020. During evaluation of project viva in online mode, multiple numbers of external experts may be co-opted as per need. The remuneration to all such experts may be granted according to the existing norms.

9. Regarding the conduction of Project evaluation of final semester it is resolved that the concerned project guide will arrange for a webinar along with an external expert and HOD of the dept. and invite the student to present his work in Google G Suite portal before commencement of the final semester examination.

10. As Grand Viva evaluation comprises of domain knowledge assessment of different topics of his/her study, it is decided that all subject teacher including one external as assigned by the respective HOD will conduct viva voce exam separately according to convenience of both expert and students through online mode and submit their assessment to the respective HOD, who after compiling those marks, prepare a final assessment out of 100 and submit the same to the COE in due time.

There being no other business to transact the meeting ends with vote of thanks to and from the chair.

*Documents for*

*Sample question papers*

*of*

*Semester end examination*

*indicating*

*Course Outcomes*

*of each question*

# GOVERNMENT COLLEGE OF ENGINEERING & CERAMIC TECHNOLOGY

AN AUTONOMOUS INSTITUTE

AFFILIATED TO MAKAUT (FORMERLY KNOWN AS WBUT)

Theory / B.Tech/CT/ SEM -VI/END SEMESTER EXAM/Paper Code- PC(CT) 618/2021-22

**Paper Name: Advanced Ceramics**

**Full Marks: 75**

**Time Allotted: 3Hours**

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

## GROUP-A

[MCQ Type Questions][Compulsory]

**1. Choose the correct alternatives of the following questions. Answer all questions.  $10 \times 1 = 10$**

	Marks	CO
i) With increase in temperature the orientation polarization is generally	1	1
a) Increases		
c) Constant		
b) Decreases		
d) None of these		
ii) Identify the material with incorrect superconducting transition temperature given in bracket	1	1
a) Sn (4K)		
c) Y-Ba-Cu oxide (90K)		
b) Nb <sub>3</sub> Ge (23K)		
d) Y-Ba-Cu oxide (300K)		
iii) Generally which of the following types of ceramic materials are used in Solid Oxide Fuel Cell	1	2
a) Semi Conductor		
c) Super Conductor		
b) First Ion Conductor		
d) Insulator		
iv) The temperature of the antiferromagnetic to paramagnetic transition is called	1	3
a) Antiferromagnetic Currie temperature		
c) Neel temperature		
b) Currie-Weiss temperature		
d) Debye temperature		
v) The garnet crystal used in microprocessor has the formula	1	3
a) YO.Fe <sub>2</sub> O <sub>3</sub>		
c) YO.6Fe <sub>2</sub> O <sub>3</sub>		
b) Y <sub>3</sub> Fe <sub>5</sub> O <sub>12</sub>		
d) Y <sub>2</sub> O <sub>3</sub> Fe <sub>2</sub> O <sub>3</sub>		
vi) Value of retention (R) in separation process using membrane varies from	1	4
a) 0 – 100 %		
c) 50 – 100 %		
b) 0 – 50 %		
d) 100%		
vii) In microfiltration process the size of separated solute is in a range of	1	4
a) <0.1 μm – 5 nm		
c) 50 – 10 μm		
b) 10 – 0.1 μm		
d) < 5 nm		
viii) Which of the following is an example of concentration driven separation process	1	5
a) Reverse osmosis		
c) Dialysis		
b) Osmosis		
d) Electro-dialysis		

ix) Units of vapour pressure could be	1	6
a) Pascal	c) mbar	
b) Torr	d) All of above	
x) Which of the following is not an example of liquid phase thin film deposition technique	1	6
a) CVD	c) Spray pyrolysis	
b) Electro-plating	d) Spin coating	

**GROUP – B**

**[Short Answer Type Questions]**

**Answer any FOUR of the following**

**4×5=20**

<b>Questions (2) to (7)</b>	Marks	CO
2. What is meant by super conducting transition temperature? Show by a graph the elec. magnetic field Hc as a function of temperature for the super conducting to normal transition. What is Meissner effect?	1+2+2	1
3. What is FIC? What is the ideal formula of Sodium Beta-Alumina? Why it is considered as FIC? Where is it mainly used?	1+1+2+1	2
4. What is the basic principle of Electro-Optical ceramics? Explain with Fig. What do you know about the 'Pockel effect'?	2+1+2	3
5. What is the relation between 'retention' and 'concentration of solute in feed and permeate side'? What is fouling in membrane separation process?	2+3	4
6. How can you derive the Zeolite membrane?	5	5
7. What are the steps involved in CVD process?	5	6

**GROUP – C**

**[Long Answer Type Questions]**

**Answer any THREE of the following**

**3×15=45**

<b>Questions (8) to (12)</b>	Marks	CO
8. At room temperature why a BaTiO <sub>3</sub> crystal ordinarily exhibits no net polarization. Draw and explain the hysteresis loop for a ferroelectric material showing applied field E vs polarization P. What is the piezoelectric property of a material? Explain why ferroelectric crystals always exhibit the piezoelectric property? Write down some applications of BaTiO <sub>3</sub> as piezoelectric material.	3+5+2+3+2	1
9. What are the three groups of crystal components which show exceptionally high ionic conductivities? Write full form of FIC. What is FIC alternately called? ii) What type of FIC are useful as electrode constituent in batteries and why? iii) What are the structural features of FIC?	3+1+1+5+5	2
10. Explain with a graph the effect of thermal treatment on magnetization of magnesium ferrite. How can you define membrane? What are the 7 aspects of membrane separation process? How can you classify the separation process based on driving force?	5+3+4+3	3,4
11. What are the limitations of polymeric membrane over ceramic membrane? Draw the flow chart showing steps involved in preparation of ceramic membrane. What are the role of binders and plasticizers in making ceramic membrane? Give an example of pore former used in making ceramic membrane.	3+6+5+1	5
12. How can you derive the DC Sputtering process for application of thin film? What is 'swirling pattern' spin coating process? Write the factors on which sputter yield depends. What are the advantages of thin film over thick film?	6+3+3+3	6

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Theory / B. Tech/CSE/ SEM -VI/Sem End/Paper Code- PEC(CS)602C/2021-22

**Paper Name: Software Engineering**

**Full Marks: 75**

**Time Allotted: 3 Hours**

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

## GROUP-A

### [MCQ Type Questions][Compulsory]

1. Choose the correct alternatives of the following questions. Answer all questions.

**10 × 1 = 10**

	Marks	CO
i) RAD Model has	1	1
a) 2 phases		
b) 3 phases		
c) 5 phases		
d) 6 phases		
ii) Which is the most important feature of spiral model?	1	1
a) Quality management		
b) Risk management		
c) Performance management		
d) Efficiency management		
iii) The feature of the object-oriented paradigm which helps code reuse is _____	1	2
a) Object		
b) Class		
c) Inheritance		
d) Aggregation		
iv) Beta Testing is done at	1	3
a) User's end		
b) User's & Developer's end		
c) Developer's end		
d) None of the mentioned		
v) _____ is a white-box testing technique first proposed by Tom McCabe	1	3
a) Equivalence Partitioning		
b) Basis Path Testing		
c) Boundary Value Analysis		
d) None of the above		
vi) What are attributes of good software?	1	4
a) Software functionality		
b) Software maintainability		
c) Software development		
d) Both A and C		
vii) Which is not a SQA activity?	1	4
a) Black box testing		
b) Integration testing		
c) White box testing		
d) Unit testing		
viii) Cyclomatic Complexity cannot be applied in _____.	1	5
a) Re-engineering		
b) Test Planning		
c) Risk Management		
d) Reverse engineering		



- |     |   |    |  |
|-----|---|----|--|
| ix) | Which of the following is not project management goal?    | 1  | 6  |
| a)  | Keeping overall costs within budget                       | c) | Delivering the software to the customer at the agreed time |
| b)  | Maintaining a happy and well-functioning development team | d) | Avoiding customer complaints                               |
| x)  | Cost and schedule are a part of                           | 1  | 6  |
| a)  | Process Metrics   | c) | Product Metrics  |
| b)  | Project Metrics   | d) | None   |

**GROUP – B**

**[Short Answer Type Questions]**

**Answer any FOUR of the following**

<b>Questions (2) to (7)</b>	<b>Marks</b>	<b>CO</b>	<b>4×5=20</b>
2. “Prototype model is best suited for long time research-based project.” Justify.	5	1	
3. “Loosely coupled and strongly cohesive system is our target” Explain.	5	2	
4. What are the differences between verification and validation?	5	3	
5. “Software does not wear but hardware does” Explain	5	4	
6. Explain briefly Information Hiding	5	5	
7. Being a project manager what are factors you should follow for developing a good software product	5	6	

**GROUP – C**

**[Long Answer Type Questions]**

**Answer any THREE of the following**

<b>Questions (8) to (12)</b>	<b>Marks</b>	<b>CO</b>	<b>3×15=45</b>
8(i))What are the relative advantages and disadvantages Spiral model has over Waterfall model?	5	1	
(ii) Explain the characteristics of a good SRS.	5	1	
(iii)For a good quality software , modularity is important. Why? Justify	5	2	
9.(i)To develop a software product when we use Top Down and we use Bottom Up approach	5	2	
(ii)Define White Box Testing and Black Box Testing with its usefulness	5	3	
(iii)Will exhaustive testing guarantee that the program is 100% correct? Explain	5	3	
10 (i)Describe the factors that influence the quality of software product	5	4	
(ii)Describe briefly Software Reliability	5	4	
(iii) Explain Mc Calls quality triangle	5	4	

11(i) Using largest of three numbers C program compute the cyclomatic complexity?	5	5
(ii)What are the function points over the size metric of LOC?	5	5
(iii) Describe concept of UML- 2	5	5
12(i) Why COCOMO is called Heuristic Estimation Technique?	5	6
(ii)Assume that the size of an organic type Software product has been estimated to be 48000 lines of source codes. Assume that the average salary of software engineers is 18,000 per month. Determine the effort required to develop the software product, total cost and the nominal development time	5	6
(iii)Explain elaborately Software Reengineering Process model	5	6



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Theory / B.Tech/(CSE/IT)/SEMESTER END EXAMINATION/Paper Code- ES(CS/IT)409/2021-22

**Paper Name: Communication Engineering**

**Full Marks: 75**

**Time Allotted: 3Hours**

The figures in the margin indicate full marks. Candidates are required to give their answers in their own words as far as practicable.

## GROUP-A

[MCQ Type Questions][Compulsory]

1. Choose the correct alternatives of the following questions. Answer all questions.  $10 \times 1 = 10$

	Marks	CO
i) Consider the following: 1. PCM 2. PPM 3. PWM Which of the above communications are not digital?	1	2
a) 1,2 only		
b) 2,3 only		
c) 1,3 only		
d) 1,2 & 3		
ii) Quantizing noise occurs in	1	2
a) PCM		
b) TDM		
c) FDM		
d) PPM		
iii) In a unipolar NRZ format,	1	4
a) The waveform has zero value for symbol '0'		
b) The waveform has negative value for half the duration for symbol '0'		
c) The waveform has negative value for full duration for symbol '0'		
d) The waveform has positive value for symbol '0'		
iv) Slope overload occurs in	1	3
a) DM		
b) PAM		
c) ADM		
d) PCM		
v) In a satellite link	1	5
a) Uplink frequency is less than downlink frequency		
b) Uplink frequency is same as downlink frequency		
c) Uplink frequency is greater than downlink frequency		
d) The link from satellite to earth station is called uplink		
vi) In amplitude modulation a particular channel is transmitted using a single carrier frequency	1	1
a) The statement is true		
b) The statement is false		

vii) In superheterodyne receiver a desired channel is selected with the help of	1	1
a) Varying frequency of local oscillator	c) Low pass filter	
b) Envelop detector	d) Audio amplifier	
viii) In AM, when carrier is suppressed, the transmitted power can be saved approximately	1	1
a) 33%	c) 73%	
b) 66%	d) 83%	
ix) Maximum frequency deviation used for commercial FM broadcasting	1	1
a) 10 kHz	c) 50 kHz	
b) 25 kHz	d) 75 kHz	
x) Noise can be reduced in FM system by using	1	1
a) Amplifier circuit	c) Phase modulator circuit	
b) Amplitude limiter circuit	d) None of these	

**GROUP – B**

**[Short Answer Type Questions]**

**Answer any FOUR of the following**

<b>Questions (2) to (7)</b>	<b>Marks</b>	<b>CO</b>
2. Deduce the expression of AM showing sideband frequencies	5	1
3. Calculate total transmitted power of AM.	5	1
4. Show how to generate FM from PM and PM from FM.	5	1
5. a. What is sampling theorem. What is the Nyquist rate of sampling for the signal $x(t)=\sin 100\pi t$ b. What is aliasing?	3+2	2
6. What is slope overload distortion in delta modulation(DM) and how it is removed in ADM.	5	3
7. Discuss the generation and coherent detection technique for binary ASK signal.	5	3

**4×5=20**

**GROUP – C**

**[Long Answer Type Questions]**

**Answer any THREE of the following**

		<b>3×15=45</b>
<b>Questions (8) to (12)</b>	<b>Marks</b>	<b>CO</b>
8. a. In an AM wave, total power is 400W and that of each sideband is 50W. Calculate the modulation index. b. Briefly explain superheterodyne receiver with block diagram and appropriate waveform.	5+10	1
9. a. Explain bandwidth of FM and practical bandwidth of FM system. b. What is Time division multiplexing? Explain. c. What is the difference between Frequency Modulation and frequency shift keying.	6+5+4	1,3
10. a. Draw the waveforms for PAM, PWM and PPM signal. b. What is quantization noise? How it can be reduced? c. A television signal having a bandwidth of 4.2 MHz is transmitted using binary PCM system. Given that the number of quantization levels is 512. Determine (a) Code word length (b) final bit rate if the signal is sampled at Nyquist rate.	5+5+5	2
11. a. What is compander? Draw the characteristics. b. With a suitable block diagram explain satellite Communication system? c. Sketch the waveform for each of the following line codes: i) Unipolar NRZ ii) Unipolar RZ iii) Polar RZ iv) Polar NRZ v) Manchester	5+5+5	2,5,4
12. a. Calculate savings of power in AM when carrier and other sideband is suppressed. b. With diagram explain double sideband suppressed carrier modulation.	8+7	1